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Cornering the Microbes of the Apiary—Part Two

The Science of Microbiology

By H. F. Wilson and G. E. Marvin

OUR beekeepers are perhaps well informed of the fact that the honeybee is an insect, and that the study of insects is known as the Science of Entomology. All forms of animal life, having the body composed of a series of more or less similar segments and some of which bear jointed appendages, are given the zoological classification of *Arthropoda*. This division includes the lobsters, crayfish, spiders, mites, thousand-legged worms, and insects. But it is not our purpose to discuss all of these groups, because they are not all concerned with beekeeping problems at this time.

The one insect which we might consider is the bee louse, which is small enough to require a microscope for study, but could hardly be called a micro-organism in the same sense

as protozoa, molds, bacteria and yeasts.

The mites, so-called because of their minute size, are close relatives of the insects and spiders, and among them we find many parasites of plants and animals. They differ from the insects by having four pairs of legs in the adult stage and no antennae, or feelers. The mites vary in size from the large cattle ticks, often called "wood ticks," to the very tiny microscopic mites known as "chiggers," which enter the pores of the body and produce a poison that causes the intense irritation known to all of us who have lived in the Mississippi Valley states.

The parasite of the honeybee, known under the title of the "Isle of Wight Disease," or the "Acarine disease of bees," is caused by a tiny eight-legged mite, so small that it requires from 125 to 150 specimens, laid lengthwise, to measure one inch. As you will see later, this parasite is many times larger than the protozoan or bacterial parasites of bees, and ranges much higher in the scheme of animal classification.

In the acarine disease, the mites enter and infest the thoracic breathing tubes of workers, drones and queens. The mites pass through their complete life history in the breathing tubes of the honeybee, and are true parasites, receiving the food from the inner walls of the trachea by rasping the walls and sucking up the blood as it seeps forth. A second source of trouble is the clogging of the air tubes and diminishing the supply of oxygen when the tracheal tubes become filled with young mites. The loss of blood and a lack of air gradually weaken the bees until they become unable to fly and are not able to help with the work of the colony. Such bees are commonly known as "crawlers."

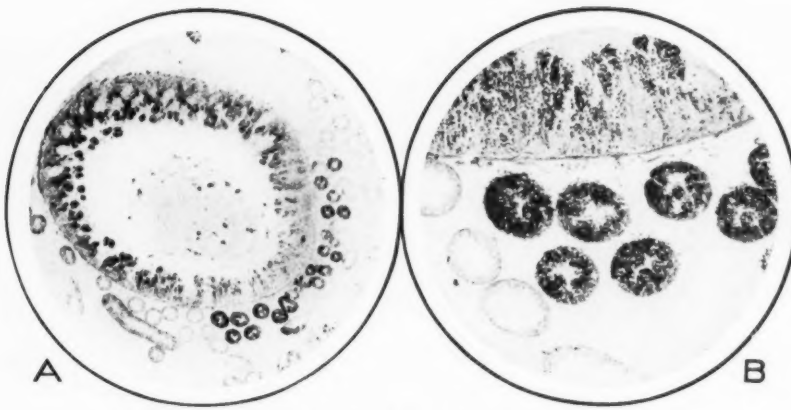
According to Dr. Rennie, who has studied this mite in Scotland, the female mites that mature inside the trachea pass to the outside of the bee when they have reached maturity, and may be found creeping among, or clinging to, the hairs of the bee. When bees, carrying such mites upon their body, move about in the cluster, the mites are transferred from one bee to another. When this has happened, the adult female mites find their way to one or the other of the first thoracic air openings, which they enter. In due course of time, eggs are laid, the mites hatch and become fully developed. The fully developed males and females mate within the trachea, and then the females migrate again to the outside. The mites are closely related to the spiders, having four pairs of well-developed legs in the adult stage.



The mite that causes Acarine disease (Isle of Wight)



Portion of breathing tube (trachea) and showing mites



A shows cross section of stomach infected with *Nosema apis*
B is the same more highly magnified

When first hatched from the egg, they have only three pairs of legs, and this gives them a close alliance to the insects whose main characteristic is that they have three pairs of legs in the adult stage. So far as known, this mite does not occur in America.

Protozoa

The Protozoa are forms of animal life whose chief characteristics are that the body consists of only a single cell (in a few cases of several or many cells, connected to form a colony), and that they reproduce not by eggs or spermatozoa, but by fission of the body into two or more new individuals. They are found abundant in the sea and stagnant fresh water, and some species invade the blood of man and animals. There are a number of special diseases of man and animals that are caused by protozoa. The more common ones of this country are malaria of man, carried by mosquitoes, and Texas fever, carried by ticks. The protozoa with which we as beekeepers are most interested are the ones that cause the *Nosema* disease of bees. The scientific name of this protozoan parasite is *Nosema apis*.

It grows and multiplies principally in the lining or epithelium of the stomach of the bee. It is most commonly observed in the spore stage and described as a more or less oval body varying in size from two- to ten-thousandths of an inch in length and about half as wide. The spore is surrounded by a resistant coat which gives it a more or less constant form. Healthy bees become infected through spores passed out in the excrement of diseased bees. Normally, conditions within the stomach of the bee are favorable for the growth and reproduction of the parasites. The disease occurs most commonly in workers, although drones and queens may occasionally be infected. The disease is responsible for the death

of many individual bees, and therefore tends to weaken infected colonies. Although many individual colonies may die of the disease, entire apiaries are rarely, if ever, completely destroyed. So far, the disease has not reached dangerous proportions in America.

Symptoms of the Disease

This disease has undoubtedly been in America for a good many years, and still our beekeepers are not familiar with it, perhaps because infected colonies do not usually appear different from healthy ones. Dwindling without an apparent normal cause is most likely to be the result of *Nosema apis*. When any slight infection occurs, it is not likely to be noticed by the beekeeper, as the infected bees simply crawl off and disappear. The appearance of the brood is generally normal, but if the colony is badly infected and the bees are dying off rapidly, they may have more brood than they can take care of. There is no difference between the behavior of an infected colony and a healthy colony, and one cannot therefore tell whether the disease is present or not, without sending in samples for examination to the Bee Culture Laboratory at Washington.

South African Bees

By C. A. M. Andrews

You may be interested to know that I am keeping bees in Zululand to find out the possibilities in South Africa. There has been very little done here in our country yet. We do not know much about the nectar-bearing flowers, so there is considerable to find out before we can "pitch camp" with any certainty of success.

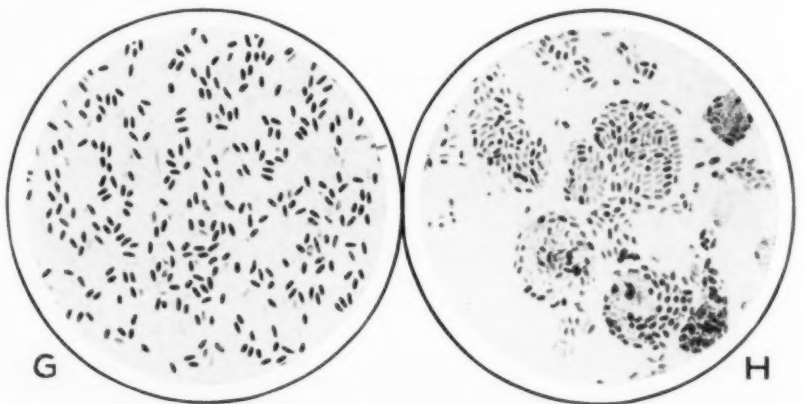
In 1929 I devoted myself to this subject, but it is too early to reach any definite conclusion. I am using ten-frame Langstroth metal-covered hives, having established forty-seven colonies the past year, all obtained from holes in the ground, bee trees and houses. The bees seem fond of getting between the wood and iron in some of our houses. It is by no means easy to get them out once they are well established.

In South Africa neither bees nor queens can be bought, and there is a law preventing importation. Our bees are chiefly the *Adansonii*, somewhat similar to the Italian, but a little smaller. The queens cannot pass the zinc excluder of ordinary size except in rare occasions.

The other bee is believed to have come from Madagascar. It is black and very cross. They come out at you in a bundle and land, tail first, on the softest part of the flesh. These bees are interesting because the workers produce eggs which produce workers. I prefer the *Adansonii* to the black. (The latter is called *Unicolor*.) The *Adansonii* is quiet, works well, but it is difficult to get a colony of the others which are quiet here.

While beekeeping in America is an industry of some consequence, here it is in its infancy. I have kept bees in modern hives for ten years and have always been keen to get all the information possible so that I might become skilled enough to make a living from bees and to study them profitably.

Zululand, South Africa.



G, *Nosema apis* as it looks close up. H, cells from the bee, packed with these parasites



More Adventures of the Bee Fairies

By Aunt Laura

Synopsis: Four children with their aunt, who is a beekeeper, are changed by a fairy bee into bee fairy children and allowed to visit the bees. This time they learn more about bee cradles.

Chapter 6

ONCE more the bee fairy children and their Aunt Laura, with their fairy guide, Fleet Wing, approached the entrance of the hive. With their neatly packed loads of pollen, Fleet Wing assured them there was no danger of being challenged by the police women who stood on guard at the door.

"When they see how much pollen we have," she told them, "they will of course recognize us as friends, not robbers." So, without hesitation, they entered, taking a careful look at Madam Poor Site as they passed her. She certainly was a shabby, ragged-winged creature, whose brusque manner and unkempt appearance quite suggested her aggressive disposition.

Fleet Wing greeted her pleasantly, but she merely nodded curtly and continued to give her attention to half a dozen or more thick-set, burly individuals that were blundering about the doorstep awkwardly.

"Who in the world are those?" cried Dickey with surprise. "They don't look like bees! What are they doing here?"

Fleet Wing smiled. "Those are bees, my dear, but not worker bees. They are just drones."

"Drones?" repeated Dickey, inquiringly.

"Oh, I know what they are," exclaimed Doris May. "They are papa bees."

Fleet Wing laughed. "Call them that if you wish," she replied.

The children inspected the big, slow moving objects eagerly. What very large eyes they had! What sturdy, strong bodies, what splendid wings! But how they blundered around, and what a queer, fussy noise they made! How the other bees pushed and bundled them about!

After considerable urging and pushing by Madam Poor Site and

the police women whom she called to help her, the drones, one by one, with a great buzzing and noisy bustle, took flight and disappeared in the air.

Eagerly the bee fairy children watched them. Then, in response to a warning glare from Madam Poor Site, Fleet Wing laughingly said: "The old girl is so fussed at those lazy drones cluttering up the doorstep that perhaps we had better move on and get rid of our pollen. She would not hurt us, but she could stir up a rumpus." So the visitors and their guide made their way through the multitude of bees and over frames to a group of cells surrounding the nursery. Some of the cells were filled partly, some entirely, with beautiful yellow pollen tightly packed down.

"Let us put our loads here," said Fleet Wing. "If you will watch me carefully and do as I do, you will see how easy it is to unload."

"Just like playing follow the leader," exclaimed Robert. So with great interest the children watched their guide as she grasped with her fore legs the edges of the cell she had selected for receiving her load; then, resting the tip of her body on its outer side, she pushed firmly, but carefully, the pollen out of her baskets with her middle legs.

"It's lucky you have six legs," laughed Dickey as he gayly followed Fleet Wing's example.

"I always wondered what use a bee could have with so many legs," ventured Robert as he gave his own pollen a vigorous poke, "but I see six is not a bit too many, is it?"

"Not one too many," replied Fleet Wing. "Indeed, I'd hate to have to do with less."

"You notice, I presume," she continued, "that we have the pollen close to the nursery so it will be handy to our babies' cradles. Let us go now," as she saw Aunt Laura and the little girls had also disposed of their loads.

"Don't we tamp it down, or something?" inquired thoughtful Mildred, comparing the pellets of pollen she and the others had just kicked off

with the neat, smooth appearance of that in the other cells.

"No, other bees will see to that." Then, to some nearby bees, she said: "Here, Ina, Bonny Eye, will you please show our guests how you take care of the pollen after it is brought in from the fields?"

The bees thus addressed obligingly came and showed the children how the tiny pellets of golden pollen were broken up with their mandibles and pressed down firmly into the cell, a bit of honey being added to preserve it.

"Thank you," said Fleet Wing as the task was completed. Then, turning to the children: "I want to tell you more about these drones."

"Oh, please do," cried the children. "You were right, my dears; a drone is the father of our worker bees," she went on. "They come from eggs just as other bees do, but we make their cradles a lot bigger and our wonderful queen-mother is careful to always place in a drone-cell an egg that will produce a drone, and in a worker-cell an egg that will produce a worker."

"We feed these drone babies well and tuck them in just as carefully as we do our other babies, only we pile their bed clothes high in order to give them a great deal of room so they will grow very large and strong and exceedingly swift of wing. Come, let me show you our drone cradles." She led the children to another part of the nursery where were grouped together cells covered over like tiny hillocks.

"Oh, oh," cried Doris May, "these are like little humps!"

"Yes, that is a good name for them, and right here are some of the baby drones just coming out." The children turned to where their guide pointed and saw that many of the tops of the little hillocks were opened and funny bee faces appeared and big, husky bodies were slowly and lazily drawing themselves out.

"What big eyes they all have!" exclaimed Dickey.

"Yes, indeed; much larger than ordinary bees, so they can more readily see the young queen as she flies swiftly through the air," answered Fleet Wing.

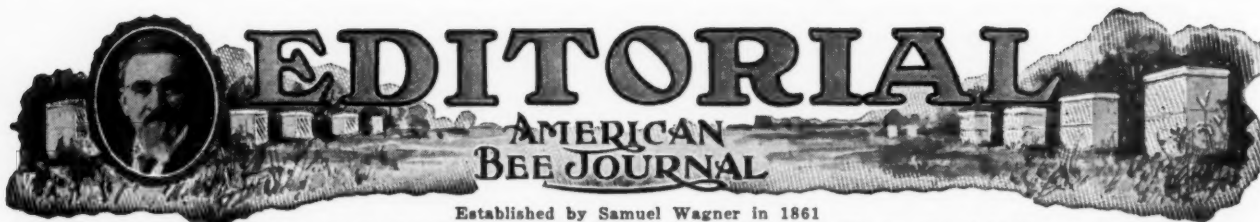
"Can they sting?" inquired Mildred, regarding these new babies closely.

"No, indeed. Drones have no stings and consequently they cannot help defend the household in any way. Neither can they make wax," was Fleet Wing's reply.

"Can they gather pollen?" asked Robert, remembering his own recent and interesting experience.

"No," said their guide, "they cannot gather pollen, for they have no pollen baskets. Neither can they

(Continued on page 326)



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Wagner's Books

Samuel Wagner established the American Bee Journal in 1861 and was its editor until his death in 1872. Mr. Wagner was a deep student of everything relating to bees, and the early volumes of this Journal contain many translations from German publications of that day.

Recently M. G. Dadant was offered some old German books by a bookseller in the city of Washington, which was formerly the home of Mr. Wagner. On receiving them he was much surprised to find the name of Samuel Wagner on the flyleaf in each case. It is an interesting coincidence that, nearly sixty years after his death, Mr. Wagner's books should thus return to the library of the magazine which he founded.

Junior Farmers

During the first days of May, Michigan State College entertained fourteen hundred high school students from more than a hundred high schools. Numerous contests in judging were arranged. To bring so large a number of young folks together at a great educational institution will serve to inspire many with a desire for advanced education who perhaps might not otherwise be interested. Perhaps the greatest benefit from such a gathering is to give the youngsters a new viewpoint of the dignity and importance of agriculture as a calling.

The boy who won second place in the vocational agriculture speaking contest had for his subject, "Beekeeping in Diversified Farming." It is evident from reading his address, which has since been published in "The Michigan Agriculturist," that this boy lives on a farm where bees, although a sideline, are not neglected. Perhaps the reason that the bees are kept in an up-to-date manner is because this boy has cared for them as his project in agriculture in high school.

Whether or not such work leads to establishing more beekeepers, it certainly does result in making better ones of those who already keep bees.

The Makers of History

In every generation a few men do such outstanding work that they are remembered by those who follow. In the nature of things there can be but few such. In our industry we look back upon the work of such men as Huber, Langstroth and Quinby with interest, and regard them as shining marks to represent their day and generation.

It would be interesting to know whether any man now on the stage of action is in their class and whether among those now making beekeeping history there is one who will find a place among the immortals. Rarely does the world fully appreciate the work of a man until he has gone, and we are probably too near to the workers now active to realize the measure of value which will ultimately be placed upon their work. It would be interesting to know who among us will be remembered a century from now.

A Word from Editor York

In a present letter received from George W. York, editor of "Bees and Honey," concerning his new location in California, he says: "Now that I have located where sometimes quite a little honey is produced and where there are some real beekeepers, I am hoping to be able to get out a creditable paper. I still enjoy reading the old American Bee Journal and can scarcely realize that it is forty-six years since I went into the office of the Journal as a very young man, but time goes swiftly on and some of us are older than we were."

You will remember reading our notice in the last number about Mr. York's transfer from Washington to California, where he will continue to edit "Bees and Honey."

A Changing World

In 1878 a beekeeper wrote to the American Bee Journal that he was located six miles south of the court house in Chicago and that the prairies surrounding him were covered with wild onions, from which his bees gathered considerable honey. One wonders where it would now be possible to find enough wild onions on the prairie to enable the bees to store any surplus. The prairies of Illinois long ago gave place to grain fields and pastures, and the neighborhood where our correspondent then lived is a busy district of a great city. In that day the beekeepers talked of numerous honey plants no longer to be found, due to the changes that have followed.

At that time hyssop was the source of surplus honey in Iowa, but it is doubtful whether a pound of hyssop honey has been produced in Iowa in a generation. Now we find the bees on the prairies of western Canada, in the vicinity of Edmonton and bordering the bush country east to Winnipeg, storing large surplus from this wild plant. Soon it must disappear there also and become only a memory.

Changing conditions bring new crops to replace the old, but the bee sucks the clover as eagerly as she once sought the wild onion and the hyssop. With the coming of large fields of such plants the bees store even more honey than of old.

More Bee Pasture

It is interesting to note the general recommendation of sweet clover as a farm crop for all parts of the country. It shows a wider adaptation to soil and climatic conditions than any other forage crop except alfalfa. The farm papers devote much space to sweet clover and its management for pasture, for soil building, and sometimes for hay. The spread of this plant has done more to extend the business of beekeeping than any other one thing. With a large acreage of such a dependable source of nectar near at hand, honey production is sure to expand.

Tit for Tat in Duties

Hamilton, Wallace & Bryant, of Los Angeles, California, who are large exporters of American honey, write us concerning the great increase in German duties on honey, which will annihilate the exportation of thousands of tons of American honey to Germany. We have the heaviest tariff of any nation in the world and have probably injured German export trade in more than one way. This is simply "tit for tat." It is unpleasant, but will certainly not cure us of the habit of trying to prevent foreign imports. Nations try to imagine that they can benefit themselves by heavy duties and forget that all can play at the same game.

More Sugar

Announcements of new sugars and new methods of production of those already well known follow each other with surprising frequency. There is every indication that the production of sugar in its various forms will far outrun consumptive demand.

Now we are advised that an enterprising chemist has discovered a new process of securing milk sugar in a sweet form from whey in cheese factories and from skim milk in creameries. Milk sugar as now in commerce is not sweet and is sold principally as a drug at a high price. The new product is sweet and can be produced at a low price and is said to be quite suitable for household purposes. Thus we find a new boost for the dairy industry coming as a result of research.

Such discoveries in other fields emphasize the need of extensive research with honey to discover possible new uses and to learn more concerning its peculiar properties.

Requeening

With many beekeepers, July is the month for requeening the hives that need young queens. The main reason is that queens may be reared cheaper at this time of the year than earlier.

Many people advise the replacing of queens with younger ones every year. We cannot agree with this. Some queens are worthless from their young days and should be replaced as soon as possible after their inferiority has been found out. But most queens are fully as good in their second year as in their first, and it is giving ourselves unnecessary work to replace them before the second year of laying. In fact, it is exchanging a positive condition for a more or less doubtful one. We know what our queen is and we do not know what the young one will be. No matter how careful we may be in our queen breeding, we will always have a certain proportion of inferior queens, so that a new queen represents an interrogation point.

Therefore, let us make this rule: If a queen is poor, replace her as quickly as possible; if a queen is good and satisfactory, replace her at the end of her second laying season only.

As to the qualities we should seek in our queens, it is mainly results. If the hive produces good crops, that is the main condition of success. Of course, non-propensity to swarming, gentleness, color, are all desirable, but they come behind the desirability for good crops. We believe all beekeepers will agree to that.

As a rule, July is the month in which bees begin to look for forbidden sweets, because very often the crop gets short, owing to drouth, in the Middle West at least. Let us watch out for robbers and let us not leave any combs of honey or weak colonies exposed to the depredations of active robbers.

New Advertising Campaign

At last the long discussed "Apples for Health" campaign is launched. It promises to be the most comprehensive undertaking in advertising yet put on by producers of any natural food. Under the leadership of Pres. Paul Stark, the association has given long and careful study to every phase of food advertising.

The greatest problem was that of finance. To raise a sufficient fund and yet have it properly distributed among those who would benefit was no easy task. The plan finally adopted is to add one cent to every bushel container and three cents to the price of every barrel, the money thus secured to be turned over to the Apples for Health Association. The manufacturers of baskets and barrels have agreed to add such an amount to the invoice of every customer, so that every grower of apples will contribute in proportion to the size of his crop. It is expected in this manner to raise a very large fund.

A secretary has been engaged to give his entire time to the project and arrangements have been made with a large advertising agency to handle the preparation of copy and the selection of mediums. Apples have felt the

competition of citrus fruits of late since the citrus advertising has been carried on so extensively.

It is probable that attention will be given to educational contacts also after the manner of the American Honey Institute. There will be much interest in the outcome of this undertaking on the part of those engaged in similar production. At one time there was serious consideration given to a somewhat similar plan of financing a campaign for advertising honey by means of funds to be raised by the bee supply manufacturers, but it failed to arouse the necessary interest. If the apple men make their plan work successfully, perhaps we may find a hint here for securing more funds for the Honey Institute.

Corn Sugar Again

If we beekeepers have assumed that the "Corn Sugar" propaganda is dead, we should disillusion ourselves immediately. Mr. Edw. G. Brown, President of the Sioux Honey Association, has just sent us copy of a letter gotten out by the American Farm Bureau Federation in Chicago and signed by Mrs. Chas. W. Sewell, Director Home and Community Department of that organization and is dated May 20, 1930. The letter was addressed to the wife of a Farm Bureau member in Iowa. We quote the first two paragraphs.

"My dear Mrs. —: We all like to get presents in the form of a box of candy, and you can imagine how overwhelmed I was when I was notified the other day that I was to receive two thousand boxes of the most delicious candies. This candy is to come to me as a present from the Associated Corn Products Manufacturers, who are sending it to show Farm Bureau women what a wonderful candy can be manufactured from refined corn sugar.

"Of course, two thousand boxes is a great deal more than my small family can use, and I want you to share this gift with me and am mailing you a box today."

The letter then goes on to show in what bad light corn sugar appears since its presence has to be declared on a label of canned foods and urges the farm wife to write directly to Secretary A. M. Hyde of the Department of Agriculture at Washington, D. C. insisting on the releasing of the restriction whereby the presence of corn sugar has to be declared on the label of canned foods in which it is used.

Mr. Brown in his remarks wonders if Mrs. Sewell, the writer of the letter, after such a windfall as two thousand boxes of candy coming into her household, immediately decided to stand the expense of sending this candy on to Farm Bureau Women, or whether the American Farm Bureau Federation did, or just who did.

Give you two guesses.

Just why the propagandists always fail to support any legislation which would stipulate labeling so that the kind of sugar used would appear on the label is incomprehensible, if their sugar is as good as is claimed.

Without a doubt the branding of all canned goods with the exact sweetening agent would cure all future criticisms and would be strengthening the Pure Food Law. The cane and beet sugar people most certainly would not object. Nor would we honey raisers. Then, who would?

Mr. Brown suggests that two things should be done by the beekeepers. First, urge Secretary Hyde not to make the changes called for, but preserve the Pure Food Laws intact, and in the second place work diligently on the local and State Farm Bureaus, so that they may see the truth of the matter.

Mr. Brown also rightly says, that this propaganda looks like an inside job, from the top down to the individual member, rather than an appeal from the member to the higher organization. Is there any reason for the individual Farm Bureau member to pull chestnuts out of the fire for a big industrial organization making corn sugar?

We agree with him emphatically, and urge our subscribers to protest to the Secretary of Agriculture and the Farm Bureau against any modification of the rulings governing the Pure Food Law.

The Adventures of the Bee Fairies

(Continued from page 323)

gather nectar, for their tongues are quite unsuited for even that task. In fact, drones would starve to death in the richest of clover fields; but in the hive they can help themselves to the nectar the rest of us have gathered—and they do, too, the rascals! They certainly eat a lot, but during the honeyflow and the warm days of summer, when there is plenty to eat, we rear and keep a great many of them around.

"You see it is this way: Supposing something should happen to our dear queen-mother so we would have to have a new queen, or perhaps we would decide we needed a young queen to start a new home for some of us, then we must have strong and vigorous drones to fly out and meet the young queen on her wedding flight. Consequently we rear a great many that the swiftest and strongest may meet her in the air and thus become the father of her workers. So we keep a great many about in prosperous times, even though they do eat such a lot and always seem to manage to get in the way; but when fall comes or the honeyflow stops we get rid of them as quickly as possible."

"Get rid of them?" cried the children. "How?"

"Oh, just hustle them out of the hive—drive them off. You ought to see Madam Poor Site handle them."

"Gee, I'm glad I'm not a drone," exclaimed Robert. "I thought at first it would be fun to just have no work to do, and get to eat and eat, and fly out whenever I wanted to, but I guess NOT if that is what would happen."

"That would be just what would happen," replied Fleet Wing.

"Well," said Mildred, thoughtfully, "if they cannot gather honey, or get pollen, or help defend the home, or make wax, and they eat such a lot and always get in the way, and you need them such a little time, I don't blame you for getting rid of them; but just the same, I am sorry for them."

"You need not be," replied Fleet Wing. "Remember that in bee life God has taught us to all work together for the good of the entire family, not just for our own selves."

"Humans could learn the lesson of unselfishness, then, from the bees, couldn't they?" inquired Aunt Laura softly.

Fleet Wing smiled, "Yes, I believe so."

Just then Mildred's sharp eyes spied on the lower edge of the comb a group of queer looking waxen cylinders, extending downward.

"What in the world are those?" she cried.

"Ah, those are our royal cradles, the cradles in which our little princesses and future queens are to be reared," answered Fleet Wing proudly. "Aren't they beautiful?"

Eagerly the bee fairy children gathered about these interesting cradles. Then they turned to Aunt Laura who smiled as Doris May exclaimed, "Oh, Aunt Laura, you showed us these very cradles this morning when we were human children, and you called them queen-cells. Oh, how wonderful, how very wonderful!"

(More adventures of the bee fairy children will be given in our next issue.)

Celebrated Walker Library Comes to America

Word has just been received of the arrival in Madison, Wisconsin, of the celebrated Colonel H. J. O. Walker Library, formerly located in Devon, England.

Through the untiring efforts of Prof. H. F. Wilson, custodian of the Miller Memorial Library at Madison, the Walker Library has been secured and will be embodied in the C. C. Miller Memorial Library at the University of Wisconsin. This will make the Miller Library one of the foremost, if not the foremost bee library in the world today.

The Walker Library itself contains 1200 or more titles, some of the books being very rare. The bulk of the material is in the English language, but French, German, Italian, Spanish, Dutch, Danish, Norwegian, Swedish, Russian, Bulgarian, Latin, and Japanese authors are also represented.

This library was originated by Alfred Neighbour, of England, about 1850. Mr. Neighbor was the author of a 300-page book on bees, "The Apiary," published in 1865. On the death of Mr. Neighbour, the library was acquired by Col. H. J. O. Walker in 1890. Mr. Walker has since made every effort to enlarge the library, particularly through the securing of the older bee books.

In 1929 Mr. Walker issued a complete catalog of the library, a wonderful bibliography in itself. Two hundred copies were issued only. Connoisseurs of libraries on beekeeping should have a copy. We understand that copies may be obtained of Dr. Burton N. Gates, 24 Charlotte Street, Worcester, Massachusetts, and that the price is about \$1.25 to \$1.50.

Originators of the C. C. Miller Memorial Library, on the death of that grand old man of American beekeeping, C. C. Miller, little realized that this library would assume such proportions, that it would attract and

acquire libraries such as the Walker Library and others which have come to it from all over the world. Prof. Wilson, the custodian of the library, has promised to give us an article later on the origin and development of the library with its contents.

Conditions in the Southern States

By Jes Dalton

To June 11, Louisiana has had less than an average honey crop. Along the lower coast the early weather was entirely too cold, especially during tupelo and willow flows. Following this there was a fair flow for a few days, but it played out, and up to date bees have only done a little better than hold their own.

Over other portions of the state, Deputy Inspector George Lott reports bees to be in a backward condition everywhere, with weather very unfavorable. Of course, we have a chance in summer and what the fall gives us yet.

— o —

Texas

Texas reports short crops over the entire state, with conditions only a little better than Louisiana's.

— o —

Alabama

In Alabama, according to J. M. Cutts, there was a very poor late spring, with considerable feeding to save bees from starvation, followed by one of the best flows in many years. This has slackened down to a bare living now. The package business has been only fair, with lots of speculation, cut-throat prices and dissatisfaction.

Personally, I believe the reports should be based on actual conditions and not on the real estate boom basis to fill the country with more beekeepers. There is no use giving out reports so optimistic that they border on falsehood or else are picked up from favorable examples.

I have, as an instance, one or two hives of bees that stored over a hundred pounds, possibly one hundred and fifty, but for each of these I have had a dozen that have required help to exist. At the present writing I am packing up for the summer, expecting to take a "Ford trip" among beekeepers of other states to study conditions and swap gossip. Hope to see some of my friends at the Medina meeting in July.



DR. H. E. BARNARD, PRESIDENT

Milk and Honey Drinks

A page of recipes for milk and honey drinks is sent out by the American Honey Institute with their June news notes. All of the drinks look mighty inviting for hot weather. Those interested, send for a sample.

Plan for Honey Booklet

For your immediate consideration, the American Honey Institute wishes you carefully to go over the plan for a honey booklet. The directors, at their recent meeting, voted to start at once on it, copy to be presented to the printer, and after the dummy was received to solicit orders. Prices will be very reasonable, provided we can get an initial order of 250,000. Better yet, if it is 500,000.

Note the prices given and get your old customers to use more honey and get new customers by giving them a booklet that will explain clearly the uses for honey, with recipes for some attractive and tasty food combinations.

When purchased in lots of 250,000, we can get these booklets to the beekeeper at the following prices: \$600.15 for 50,000; \$300.10 for 25,000; \$120.05 for 10,000; \$60.05 for 5,000; \$30.05 for 2,500; \$12.05 for 1,000; \$6.50 for 500; \$1.50 for 100. When purchased in lots of 500,000, we can get them for you for \$476.60 for 50,000; \$238.30 for 25,000; \$95.35 for 10,000; \$47.70 for 5,000; \$28.35 for 2,500; \$9.55 for 1,000; \$5.00 for 500; \$1.25 for 100. There will be no extra charge for additional imprinting of trade mark if all material is at hand when the run is made. This would necessitate ordering in advance, of course.

This booklet will be four by six inches, will contain sixteen pages, and will feature half a hundred honey helpings; black printing on white paper, illustrations in green, cover page in green and white.

Be sure to write to the Institute if you wish any booklets to be considered for you or if you wish any further information. These prices are very attractive, running from 1½ cents each in small lots to about 1 cent each in large lots for initial printing of 250,000, and from 1¼ cents each in small lots to less than 1 cent each in large lots with an initial printing of 500,000.

How to Get the Approval of the American Medical Association on Foods

The American Medical Association, through its committee on foods, has developed a plan for listing "Accepted Foods." Foods which are so listed may carry on the package and in advertising an insignia or seal which indicates that the product has been accepted for listing in the book, "Accepted Foods," and, if desired, for advertising in the publications of the American Medical Association.

Any beekeeper or dealer in honey who uses an established brand can submit his honey for consideration by the committee on foods. Since honey is a simple product unchanged by manufacture, it will not be difficult to secure the approval of brands which make known your warranted health claims which are in accordance with the regulations of the Federal Government.

American Honey Institute will be glad to furnish specific instructions for submitting brands of honey to the American Medical Association to all members of the Institute who are interested in the use of the insignia.

National Dairy Council Sending Out Honey-Milk Recipes

The special milk and honey drinks mentioned at the beginning of this department were sent to Dr. Chinn, educational director of the National Dairy Council, and we are happy to find that every one of the recipes have been used by Miss Chinn in newspaper food suggestions issued by the Council.

The National Dairy Council holds its annual meeting at Minneapolis on June 18, and Miss Fischer is preparing to suggest other combinations which the extension workers of the Council can give their classes for home makers and children. A special sheet concerning honey-milk drinks is being prepared for this meeting. Get a copy of these recipes mentioned at the beginning of this department and interest your local milk company to include them in their advertising.

Honey in "Saturday Evening Post" Advertisement

"They Never Pack 'Seconds' in Glass." That's the title of the advertisement the Glass Container Association of America ran in the June

7 "Saturday Evening Post." And to read further:

"To win such a discerning buyer, only the best foods could be packed in glass. And it is for her that packers put their most perfect fruits, their purest jams and HONEY, and their most flawless vegetables, into glass containers that challenge her inspection as she steps into a shop."

The glass container advertisement is effectively illustrated with a beautifully colored picture of jars of candy, fruit, honey, mayonnaise, spinach, and others. You must see the ad with its splendid picture to appreciate how beautifully honey fits into the story.

Osteopaths Feature Honey

Mr. Adolph Matz, of Brookline, Massachusetts, sends the Institute a leaflet using our basic suggestions for honey, and further informs us that he is exhibiting honey at the national osteopathic convention in Philadelphia. Osteopaths are very much interested in honey and are recommending honey to their patients. The Institute suggests you cooperate with them in distributing honey recipes or giving them recipes which they can use.

March Issue Suggests Blue Skies and Warm Weather

I like blue. Blue skies generally mean warm weather. Warm weather means lots of young bees, and around here chokeberry is important in early brood rearing, as we have no fruit bloom.

I like the American Bee Journal. I look for it the first of the month as regularly as I look for breakfast in the morning, and I read it from cover to cover the first week and then spend the next three weeks looking for the next issue.

Cecil J. Lent, Clare, Iowa.

Copper Sprays and Bees

Prof. Dr. Borchert has investigated the action of copper compounds commonly used, both sprays and dusts, also copper sulphate and basic copper carbonate, on bees. The poisonous effect was found to be the less, the more firmly the substance clung to the bee's body. Poisoning was through the mouth in all cases; evidently the bees swallow the substances in cleaning themselves, and are not so likely to be poisoned if they cannot easily remove them. The lethal dose for a bee was found to be equivalent to about 0.009 mgm. of metallic copper. (Thus, dust or spray substance containing one pound of metallic copper would suffice to poison about 53,000,000 bees.)

A. D. B.

Doings in the Northwest

By N. N. Dodge

Prospects Bright

With fireweed just coming into bloom, prospects look bright for heavy yields of honey in the Pacific Northwest. Julian Joubert, of Enumclaw, Washington, reported that bees in the lower Cascades had built up well on a heavy spring flow from maple and wild blackberry, but that rains and cool weather in May had caused them to consume all of the surplus stored from the early flow. Many colonies were forced to retard brood rearing; drones were killed, and queen-cells torn down by the bees due to the unfavorable weather. Colonies as a rule were very populous, and the beginning of the raspberry flow in the Puyallup Valley found the bees in excellent condition. White clover has been particularly luxuriant and should provide considerable surplus in districts where it is abundant. Reports from western Oregon indicate similar conditions, with heavy spring flows from vine maple and figwort.

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Boyden Reports California Promising

The Seattle branch of the A. L. Boyden Company, honey packers and bee supply manufacturers of Alhambra, California, was favored with a visit from Mr. E. Wynne Boyden during the week of May 19. Mr. Boyden reported California conditions more promising than for several years, with beekeepers anticipating normal yields. He said that he envied the beekeepers of the Northwest their rainfall, and expressed a desire to obtain a portion of it for southern California. He reported that vegetation all up the coast indicated an abundance of moisture and that honey plants appeared to be in good condition.

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"Miller Maid" Recommends Honey

Interest in honey as a health food has been shown by representatives of the Miller Maid Cookware Company of Kansas City. Mr. C. Floyd Hall, district manager for the Northwest, with headquarters at Salt Lake City and temporary offices at Spokane, Washington, has instructed all salesmen and demonstrators in his territory to emphasize the health and food values of honey at every opportunity. Miller Maid Cookware is distributed directly to the consumer by representatives of the company. Demonstrations are made in the home of prospective purchasers, a complete meal being prepared and served by the demonstrator. Only foods of recognized health qualities are used, and

these are prepared in a manner designed to conserve all of the valuable health principles. Vegetables, whole wheat flours, the cheaper cuts of meat, and honey are among the food products recommended.

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Movement of Honey Improves

Movement of honey through retail channels has been reported as improved during the month of May. There is something of a holdover of bulk honey, with bottlers buying in small amounts only.

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Honey to Alaska

Honey is to pioneer the Yukon Trail. Early in June, Mr. H. A. R. McDonald, representing some twenty manufacturers and distributors of food products, sailed for Alaska. He expects to spend six months in the far North and will call on concerns merchandising food products throughout the territory. Mr. McDonald is familiar with Alaska, having lived there for many years, at one time editing a newspaper in Ketchikan. He states that it will be necessary to cover much of the territory in an open dug-out canoe equipped with an outboard motor. Alaskans are consumers of large quantities of syrup, according to Mr. McDonald, who will attempt to convert them to the use of honey. Freight rates are high from "the States" to Alaska, and for this reason Alaskans insist on receiving only the highest quality of merchandise. Mr. McDonald believes that there is an immense potential market for honey in Alaska, and he will attempt to convince the people that honey is the finest sweet.

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Ella Lehr Features Honey

The name of the Ella Lehr Cooking Schools is becoming famous throughout the Northwest. Operating in conjunction with newspapers, representatives of Miss Lehr's cooking school give free cooking demonstrations during the afternoons of several successive days in the larger towns and cities. Honey is one of the foods recommended, and numerous methods of using it in the kitchen are demonstrated. Mr. A. W. B. Kjosness, manager of the Mountain States Honey Producers' Association, reported that sales of honey in Boise, Idaho, increased to a startling extent following the demonstration sponsored by the cooking school in that city.

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Riedel Visits Seattle

On May 31, Mr. W. M. Riedel, of the Riedel Apiaries of Alberta, Cana-

da, was a visitor in Seattle. Mr. Riedel was on his way home after several weeks spent in California arranging for the shipment of twelve hundred packages of bees. The Riedel brothers, W. M. and C. G., operate 1500 colonies of bees, and in 1929 averaged 200 pounds of sweet clover honey to the colony. They have found it desirable to winter only two of three hundred colonies, killing the others and replacing them each spring with package bees from California. Sweet clover is the major honey plant, as it secretes nectar at 70 degrees F., whereas alfalfa does not secrete heavily in that region below 85 degrees F. Since the temperature rarely remains at that level for any length of time, alfalfa does not figure heavily as a honey plant. The Riedels pack their entire crop of honey in 2½-pound and 5-pound pails, shipping it to jobbers at the rate of one carload per week until the crop is gone. Since many Canadians prefer honey in the granulated condition, crystallization offers no drawbacks to packing the entire crop in small containers, according to Mr. Riedel.

Decisions in Famous Graham Case

Mr. T. C. Burleson, who has been keeping in close touch with the legal battle involving the constitutionality of the California apiary inspection law, reports that the appeal from the decision of the lower court has been denied by Superior Judge Ernest Weyland. The fining of C. J. Graham for moving diseased bees without a permit was upheld by this decision.

From the report received, it seems that an attempt was made to test the validity of the law by an appeal to the higher court. The judge is reported to have said that "the general scope of the act is proper, and it is but one of many laws involving the general police powers of the state."

This decision of the higher court will be gratifying to the majority of the beekeepers of California. There are certainly not many beekeepers who would look with favor on the unregulated movement of bees about the country; and the decision of the court upholding this feature of the law will doubtless meet with hearty approval.

In handing down his decision, however, Judge Weyland is reported to have said: "It may be that the provisions of the act are entirely too drastic as regards destruction of stands of bees without providing for a hearing upon the question as to inspection and giving the owner of the bees alleged to be infected a chance to combat the claims of the inspectors; but it does not follow that

because the act is unconstitutional in these particulars it would be unconstitutional as to the inhibitions against moving diseased bees without permit."

The point thus commented on by Judge Weyland was not essential to the main question at issue, and cannot, therefore, be quoted as authority either one way or the other; but it seems quite plain that if the decision had been on the destruction of bees or hives without due process of law, instead of moving bees without permit, the case would have had a different ending. Since the effectiveness of the California bee inspection law depends on the power which it is supposed to give the inspection authorities to destroy diseased bees and equipment whenever and wherever found, without recourse to court procedure, this *obiter dictum* of the court would seem to suggest a change in the law.

Since there is at least one method by which disease can be thoroughly eradicated without destroying either the combs or the hives, the remedy for the situation is not hard to find. Public funds spent in combatting disease by means of approved scientific methods will not only be more effective in eradicating disease; it will create a more wholesome and friendly feeling in the beekeeping world.

R. B. M.

Candle Manufacturers Agree Not to Use Words "Beeswax" or "Wax" to Mislead

According to an agreement between the Federal Trade Commission and a candle manufacturing corporation, the latter agrees not to use the words "beeswax" or "wax" on brands or labels or in advertising unless the candles are composed in substantial part of beeswax and the word "beeswax" or "wax" is accompanied by an explanation that the candles are not made wholly of beeswax, but contain in part ingredients other than beeswax.

This is as it should be, and we hope that the same ruling can be agreed to by all other manufacturers using beeswax in any way. The same ruling should also apply to the use of honey in food products of any kind where the actual use of honey is in name only and not in fact. Several cases have come to our attention of bakers who use the word "honey" to describe a bread baked and distributed by them containing no honey whatsoever. However, they were keen enough to recognize the advertising value of the name and so use it irrespective of the fact that they are not employing honey in any way in bread making.

Changes in Honey Institute

At the recent meeting of the Board of Directors of the American Honey Institute some changes were made. L. C. Dadant, who has served as secretary-treasurer since the organization of the Institute, suggested that the work of his office should be divided and that the commercial honey



Russell H. Kelty, new Treasurer of the American Honey Institute

producers should be represented on the Board. With this in mind, he offered his resignation.

Since it seemed best that the secretary should be at the headquarters of the Institute, Miss Malitta Fischer, Dr. Barnard's capable assistant, was selected for this office.

Russell H. Kelty, professor of beekeeping at Michigan College of Agriculture and the efficient secretary of the Michigan Beekeepers' Association, was elected a director to represent organizations not conducted for profit. Since the Michigan Association offers a larger support than any other state beekeeping organization, it is very fitting that they be thus recognized. Professor Kelty was also elected treasurer and will have charge of all financial affairs of the Institute. It was at the convention of Michigan beekeepers that the plan of paying one dollar per ton of honey produced, for support of the Institute, was first suggested.

MEETINGS AND EVENTS

Summer Chautauqua in Wisconsin

According to the last issue of the Wisconsin Bulletin, another Chautauqua is being planned at Madison, Wisconsin, during the second week in August. Those who have attended previous Chautauques will know how enjoyable these meetings have become. The beekeepers of Wisconsin should by all means set aside this week for attendance at the summer Chautauqua at Madison, and it is hoped that there will be a lively delegation from other states as well.

Probably there will be further details of the program later.

Illinois State Fair

The dates for the Illinois State Fair have been set as August 16-23. Now is the time to start preparing your exhibits for the bee and honey division. Prepare a good exhibit and capture some of the prize money and have a good time while you are doing it. Copies of the state fair premium list can be secured by writing to the State Fair Division, Department of Agriculture, Springfield, Illinois.

Our beekeepers should remember that exhibiting at the fair is the best way to advertise honey.

Kansas Twenty-ninth Annual Picnic

At a recent picnic of the Kansas State Beekeepers' Association a new organization was formed, to be called the "Kansas Federation of Beekeepers' Association." The meeting was attended by seven associations throughout the state. Kathleen Williams (Mrs. Clarence W. Williams), of Burlington, Kansas, was elected secretary of the new federation.

O. A. Keene, of Topeka, was elected president; J. F. Rule, Parsons, vice-president. The next meeting of the state's new organization will be held during Farm and Home Week in Manhattan, Kansas.

North Dakota Summer Meeting

Secretary Munro announces that the summer meeting of the North Dakota beekeepers will be held at Carrington on July 18. Among the speakers will be Hon. Joseph A. Kitchen, commissioner of agriculture; Ralph G. Smith, president of the Mountain States Honey Producers' Assn., W. F. Boylan, Pres. of the North Dakota Beekeepers' Association, and Frank C. Pellett, Field Editor of the American Bee Journal.

This is the second time the association has met at Carrington, a similar meeting having been held there four years ago.

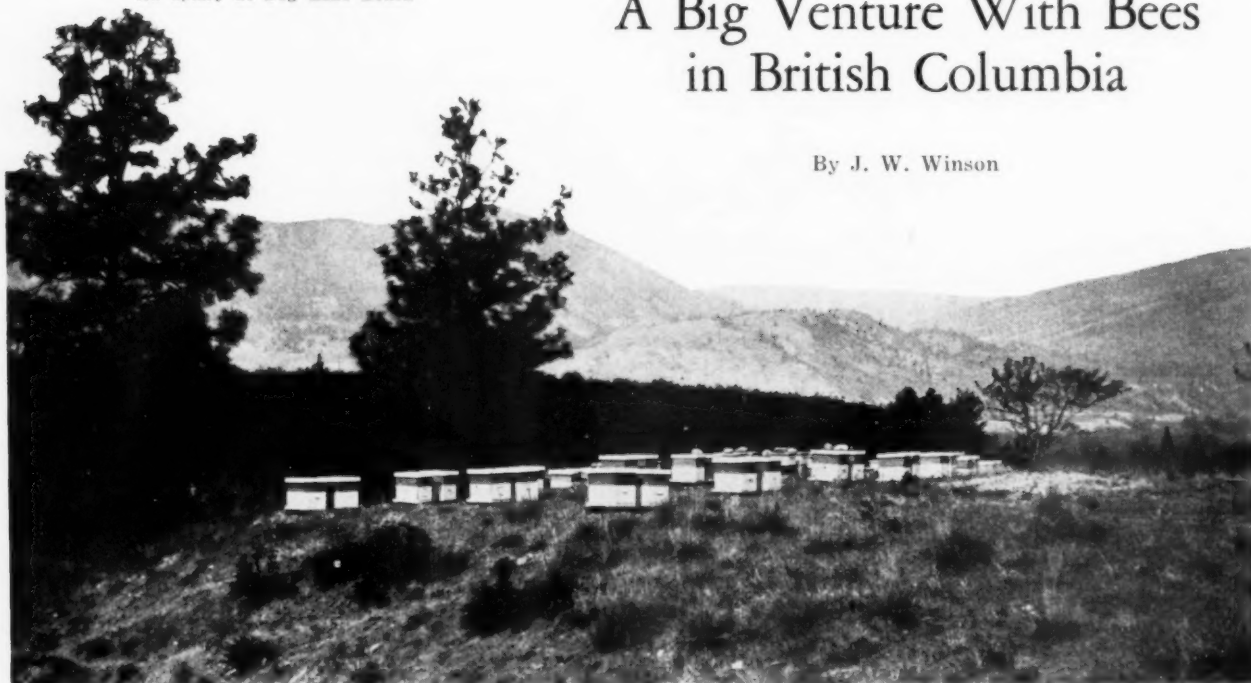
Hambleton to Coordinate Meetings

Mr. J. I. Hambleton, apiculturist of the U. S. Department of Agriculture

(Continued on page 347)

A Big Venture With Bees in British Columbia

By J. W. Winson



BRITISH COLUMBIA is reputed to consist mainly of mountains and tourists, but mountains imply valleys, and in some of these are low meadows and climable benches.

Here, save for the few remnant cattle ranges of the high interior plateaux, the agriculture of the province is conducted. The Lower Fraser Valley, largest of all and nearest the coast cities, is the great farmyard of Vancouver, with cows and chickens, pigs and bees in close set "nuclei."

Beyond the Coast Range running north and south is the Okanagan Valley, a watered basin that changes its name a little at the international border, becoming Okanogan as it winds down to the great Columbia River.

This valley, which may be traced through other names to the cold circle of the Arctic, is at its southern end the nearest climatic relative to California to be found in the province. It is arid and irrigated, water being plentiful. It is gemmed with lovely blue lakes to which swift streams pay homage. Greasewood creeps up over the line for thirty miles, sagebrush and wormwood plod on for three hundred, greying the dry hills of bunchgrass and sunflower, bushes of amelanchier, ceanothus and willow suit their desire to dry hill or waterway. It is a fair way in spring, green-misty and flower specked, but brown baked in summer. Grasshopper—sizzling, dusty, above the levels where the water courses flow.

Below these are alfalfa patches of intense green, fields of tomatoes, corn and cantaloupe, orchards of apple, peach and cherry, a prospect inviting to the beekeeper.

But all is not pasture that's green! The farmer grows and cuts alfalfa for hay, not for honey. Orchardists spray and cultivate, yet there are wild untutored streaks and patches where Indians enjoy their ease on reserves, where cultivators are less diligent and water courses run.

Here sweet clover flourishes, sainfoin blushes, and alfalfa holds tenaciously to the soils and blooms as freely as it wills. Here and there, too, and more frequently as good knowledge spreads, orchardists are leaving their clover crops to grow and bloom. They are planting sweet clover as a soil tonic and a crop to keep the ground good until needed for other things.

So the outlook seemed hopeful for an experiment in extensive beekeeping to W. H. Turnbull, of Turnbull's Apiaries, Ltd. In 1929 he set out half a dozen apiaries from the Thompson River south to the Okanagan. His crop was fair, conditions seemed to be reliable. He interviewed fruit growers, ranchers, Indians and government experts. All encouraged him to spread further. Many small beekeepers sold out to him; others invited him to take theirs over on shares. With only three exceptions in a stretch of two hundred miles from Lytton to Oliver did he meet with disapproval. Two are now in league with him, and the objections of the third are not regarded as serious by those who know the ground.

Both orchardists and ranchers welcomed his project heartily, some offering to pay him for bringing bees in their acreage, but in every instance he has insisted on paying the

usual "rent" to keep him independent in his operations.

It was decided that the five hundred colonies owned by the company in 1929 should be increased to fifteen hundred in 1930. This meant a big investment all at once, much labor in little time, and expert assistance where such knowledge is rarely found.

Headquarters were established at Penticton, the southern extremity of Okanagan Lake. The orchards of Naramata rise on the eastward benches; westward and north are the fruit lands of Summerland; to the south is Kaleden and the newly irrigated slopes of Oliver and Osoyoos. The alfalfa fields of Merritt and Nicola are a hundred and fifty miles northward, and beyond them the Lytton orchards.

As four hundred colonies are placed in this upper valley, a secondary headquarters is placed at Nicola.

Here the thermometer drops to 35 below, but the bees wintered well in double hive cases packed with sawdust, a plan to be followed on the new hives this year.

Three full carloads of hives and frames came to Penticton from a B. C. supply house that gave excellent service. Two hundred and fifty-three pounds of paint were strewn over the bodies before they went to the yards. Three tons of foundation, less one hundred and fifty pounds, were wired into the frames during the winter months, an operation which shows the magnitude of the new venture.

The package bees were Californian, of course, and words of high praise were given for the quality of the bees, the promptitude and intelli-

gence of the service. The bees seemed anxious to come, few dying on the way. One queen was so determined to come that she stole her passage, riding as a stowaway outside one of the packages. The package had its own queen inside, yet the bees fed this one through the wire. A few stray bees clustered about her as she hoboed her way from California to British Columbia. Is there any other instance known of a queen stealing a ride like this? On arrival she was given the bees in the package she had traveled with, the caged one going to a queenless colony. The bees built up readily, some eight frames five weeks after arrival.

Twelve tons of sugar was used in feeding the thousand packages, and some honey left over from a "wild clematis" flow last fall, a dark honey of unusually heavy density and remarkably fine flavor—a honey feared by the storekeeper, but eagerly snapped up by the epicurean beekeepers for home consumption. Feeding is continued right through to the honeyflow, though dandelions and fruit bloom are yielding. They are fed as long as they will take the syrup, on the principle that an extra frame of brood at the honeyflow more than pays for the extra can of syrup.

A power-driven Radial extractor by Hodgson, of New Westminster, is set up. Another will be brought in before the honeyflow. A bottling plant is on the way, to handle the expected crop.

It is a courageous adventure, thus to treble one's business in one season, requiring a stout heart and good faith, not to be discouraged by trifles. The faith is founded on experience and judgment. In irrigated regions the water is certain and blooming is constant. It is a venture carried to the known limit of capacity, for none knows how many bees these narrow



Outapiary at Kaleden, British Columbia

valleys and narrower orchards can carry.

Expansion will be made as warranted. Contractions will follow quickly if experiments are justified. Two hives or ten hives in a three-hundred-acre stretch of orchard land may be said to "cover" it, but they are no indication of the amount of legume honey the crop will yield. It may be that more concentration will be possible, saving transportation, or perhaps the colonies must be dispersed to obtain a surplus. That is yet in experiment. For this year the bees are divided among thirty-two outyards; whether too many or not enough, probably the end of the season will reveal, but the beekeeping interests of this mountainous province are all in eager expectancy concerning the experiment.

It is the first expression of confidence in beekeeping as a real business the province has seen. Only

three or four men are giving their whole time to honey production in British Columbia, and their success, while being solid, has not been remarkable at all. Turnbull's Apiaries, Ltd., is therefore a spectacular pioneering venture.

The Annual

The Beekeeping Annual for 1930 has appeared. This is an English publication, edited by Herbert Mace, which sells at one shilling. Each year Mr. Mace issues such a publication containing 100 pages or more about current happenings in the beekeeping field.

Articles dealing with recent scientific advances, books of recent publication, association reports, shows, meetings and other items of general interest, are included. Copies may be secured from Mr. Mace at Harlow, Essex, England.



A load of bee packages in British Columbia going out to location

The Permanent Eradication of American Foulbrood

By Dr. Mart R. Steffen

IN the following paragraphs an attempt will be made to convince the reader that American foulbrood can be completely eradicated, that the radical destruction of infected colonies is absolutely necessary, and that even this will fail to eradicate the disease if the honey is not treated.

Having now whetted the readers' appetites for what is to follow, an exposition of the qualifications of the writer is in order to lend the required authority to the statements about to be made, and first mention will be given to personal experience with the disease so thorough that it put the writer out of the bee business, at least temporarily. The second qualification enlisted to give merit to this treatise would be the writer's professional training, and, lastly, his experience in the eradication of various infectious diseases of animals gained as a former inspector in the Bureau of Animal Industry of the U. S. Department of Agriculture.

It might be well to give warning at this point that, in order to discuss the subject thoroughly and openly, it may be necessary to disregard the feelings of some of the writers and others who have from time to time taken more or less definite stands with regard to the problem, and to make it clear that this writer has no intention of deliberately offending anyone.

Now, to approach the subject fittingly a beginning will be made by examining some of the methods used in the eradication of animal diseases. First let us all understand that by eradication the sanitarian means to wipe out the disease, to permanently and completely clean it out of a given area, such as a county, a state, or the entire country. Eradication differs from control in that it definitely puts the disease out of existence. Foot and mouth disease has been completely eradicated from these United States, although four separate re-infections have occurred at intervals of years by importation from Europe. In each instance the disease was completely cleaned up within a year by the enforcement of rigid quarantine regulations and the literally ruthless slaughter of infected animals. In at least one of these outbreaks the rigid enforcement of the quarantine included the stationing of men with shotguns on infected premises for the purpose of shooting pigeons and other birds alighting in the barnyards—this to prevent them from carrying infected droppings and the like to non-infected farms.

These may appear extreme measures, but it takes such measures to

get the desired results. In practically every European country, foot and mouth disease is constantly present, and due to the dilatory methods pursued there it will probably never be eradicated from those countries; they content themselves with control measures, which are always a failure in eradicating infectious diseases because they do not go far enough; in fact, whenever control measures are the limit of attempts to wipe out an infectious disease it is a tacit confession that the disease is really **beyond** control and will never be eradicated.

Tuberculosis is another disease which, while not yet wiped out, is slowly but surely being eradicated from this country. Here again ruthless slaughter of the infected animals is the measure responsible for the very remarkable success attained so far.

The two diseases just mentioned are the most notorious, and the method of their eradication is a matter of public knowledge. Other diseases, such as Texas fever, scabies, hog cholera, and infectious abortion, are being eradicated by rigid quarantine coupled with definite remedial measures **which succeed only because the movement of the affected animals is under the control of man.**

The flight of the bee is not under the control of man, and even the most rigid quarantine of infected areas can never result in eradication of the disease, no matter what form of remedial measures short of destruction are used in conjunction with quarantine, because the danger is not only from bees of the infected area breaking out of quarantine; it is fully as much from bees from healthy areas and healthy colonies breaking in.

In every instance where success attended the efforts at eradication of an infectious disease, that success came through the work of corps of highly trained men—men not only highly trained in the actual work of eradication, but men with the necessary professional schooling; in the case of animal diseases the men in charge of the eradication campaign as well as the men actually doing the work in the field are in every case graduate veterinarians. Many factors enter into a work of this kind which laymen seem to find impossible of comprehension, and the records of eradication campaigns will show that whenever setbacks have come they have come because of a let-down in the qualifications of the personnel employed or the ill-timed interference of laymen, such as county agents, politicians, and others. If we have learned anything about the posi-

tive essentials for the eradication of an infectious disease, it is the two things just named, namely: that half-way measures will not do and that the average layman cannot grasp the fundamental requirements for a successful outcome.

The handling of foulbrood of bees up to this time, excepting in those states where fire has been the treatment used, has not even been a half-way measure. Even in the states in which burning of infected colonies is now carried on, nothing is done to stop the spread of the disease germs in the honey, a control measure which is absolutely essential because honey is the chief article of diet of the bee. This fatal omission of a vital measure is inexcusable, because if **one** thing has been made certain about American foulbrood it is the fact that the infection is in the honey, and it is a point in proof of what has already been said about laymen not comprehending the fundamental requirements of infectious disease eradication. Any campaign for the eradication of American foulbrood must, to succeed, include either the destruction of the infected honey or its disinfection by boiling, or other suitable means.

This may appear, indeed, as a shocking realization; but a reality it is, and to ignore it means failure in the end.

Could the flight of the bee be controlled, or only her robbing propensity, the destruction of the infected colony would not be so imperative; but the destruction of the infection in the honey is imperative under any and all conditions from the viewpoint of eradication requirements.

Again, to be successful, efforts to eradicate an infectious disease must be in the nature of carefully planned campaigns. Sporadic attempts made in widely separated counties are, in the end, waste of time, honey and money. A campaign should be statewide, beginning in either end or both ends and moving forward by tiers of counties. Such a campaign, coupled to an embargo on bees and equipment from infected areas, would result in complete eradication in a comparatively short time. Here again the embargo must be an actual one; this means that not even healthy bees may be moved from an infected territory into a clean territory or into one in which eradication is under way.

We have now mentioned three absolute essentials for the permanent eradication of American foulbrood, namely: destruction of the infected colonies, destruction or disinfection of the infected honey, and an embargo on bees and equipment from

infected areas. Of these three, none is the more important, but all three equally.

An adjunctive requirement remains to be considered, and that is the matter of intelligent publicity. Beekeepers fear the publicity attending the discussion of brood diseases on the grounds that it may have a bad effect on honey sales. At the convention of the Wisconsin Beekeepers' Association at Milwaukee for 1929, both the chief of apiary inspection and the state entomologist took the stand that brood diseases should not be discussed in the meetings of associations or in bee journals.

Such a stand is entirely contrary to the facts as they have been found in connection with the eradication of animal diseases, and shows a fatal lack of understanding of the subject as a whole. Many years ago when a certain state veterinarian was approached for the purpose of enlisting his support in the inauguration of a campaign for the eradication of contagious abortion in cattle, he refused to cooperate because he held the opinion—which has since been shown to have been correct—that the required appropriations could not be obtained because contagious abortion was not a menace to public health. Since that time, physicians have found that the milk from cows affected with contagious abortion does produce a definite pathological condition in human beings who drink it, and contagious abortion in cows has as a consequence been marked for eradication. And it will be eradicated.

If it could be definitely shown that honey infected with American foulbrood has a certain pathological effect on human beings who eat it, such a demonstration would be a powerful lever with which to pry loose the necessary funds for attempted eradication, provided it could at the same time be shown that honey is a valuable article of diet, a thing which could be easily done. Furthermore, a good cause always benefits by intelligent publicity; secrecy always impugns an element of deceit or ignorance.

In the light of recent startling discoveries along bacteriological and pathological lines, it is not unreasonable to hope that honey infected with American foulbrood may really have a salutary effect on certain pathological conditions in the human body. The recent discovery that the organisms causing malaria are a cure for certain forms of paralysis heretofore considered incurable is certainly no less fantastic even though true. These thoughts are put down here to show how broad this subject is, that laymen should treat it with respect, and that secrecy can serve no good

purpose in a cause like ours. If the honey industry ever attains the proportions that beekeepers hope for, many entirely disinterested investigators—from a beekeeping standpoint—will delve into every phase of the industry, and that without regard for those fine sentiments the genuine beekeeper holds so dear. Scientists must be cold-blooded; and it is good that they are. True science is nothing more than an intelligently classified knowledge of nature; the more we understand of it the better we know the Author of it, and the better we know Him the better men we become.

While American foulbrood is the great problem confronting beekeepers, it is no greater in difficulty of solution than any of the diseases in the domestic animals that have been eradicated. To hush up its discussion is a confession of surrender in more ways than one. A different confession than this is necessary, and that is to confess that so far we have been resorting to half-way, poorly directed efforts at its eradication. The disease can and will be eradicated permanently if the beekeepers make up their minds that they want it done. The measures indicated in the foregoing chapters may seem severe and difficult of accomplishment, and possibly they are; but a short, hard fight with them as weapons will put an end to that scourge of modern beekeeping—American foulbrood.

In conclusion it is again to be pointed out that the principles above elucidated are not the personal opinions of the writer, but merely a rough compilation of facts learned long ago by men who make the control and the eradication of infectious diseases their life work. It behooves all men to give careful study to these principles if they hope to take any part in the wiping out of a contagious disease; to disregard them means blundering confusion of mis-directed efforts.

Michigan Apiary Inspection in 1929

By H. M. Krebs
Chief Apiary Inspector

The past year shows a vast improvement on the amount of American foulbrood in the state. It has been decreasing slowly since the steady state-wide drive started in 1927. At that time 15.1 per cent was found. In 1928 this had decreased to 13.3, and last year to 7.95.

The percentage by apiaries also shows an improvement. In 1927 it was 26.9 per cent; in 1928 it was 19.8, and in 1929 it was 14.5. The drop in the disease the past year was obtained even though new territory was inspected for the first time.

There is very little territory that has not been covered at least once, a few small areas remaining in seven counties. Next year we hope to complete the first time through the remaining territory. Work is getting easier and each man can cover more ground each year as time goes on; hence, even with a smaller staff, re-checking old territory and getting over some parts of the new should be possible.

In 1928 there were sixty-six inspectors inspecting 98,566 colonies; in 1929, forty-three inspected 91,523 colonies.

Little trouble is encountered with beekeepers in clean-up work, as they realize what disease means to them. This is in contrast to the position at the beginning of the work.

We now have 20,609 beekeepers under inspection, owning a total of 172,485 colonies. When the state is entirely under inspection we can hope to have approximately 25,000 beekeepers and between 200,000 and 225,000 colonies of bees.

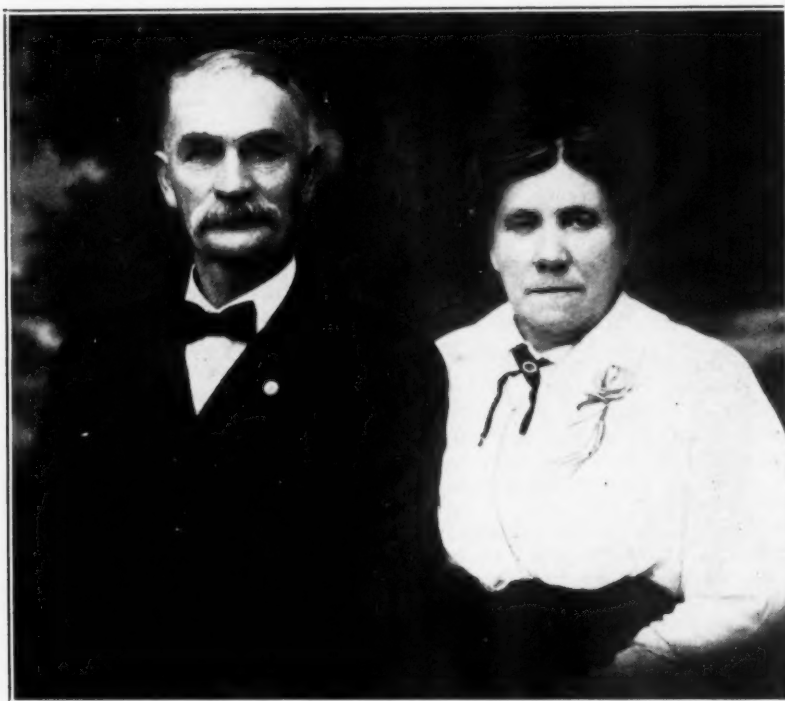
Considering the number of colonies under inspection and the amount of disease found during the past season, the percentage of disease last year was $4\frac{1}{4}$ per cent, as against 20 per cent when the work was first started, the cost per colony having been decreased to 28.6 cents, which was below the cost of any other year, and it is expected that it will decrease each year as the inspectors are able to cover more territory and as the work becomes more efficient.

Spring Rains Good on Coast

The Pacific Coast has been receiving a fair share of spring rain during the months of February and March. Owing to the long-continued drouth, which was not broken till seven long months of absolute dryness had been experienced, the rainfall, to date, is not up to normal—not by considerably more than five inches. But at the present time the skies are overcast and the promise of more rain is written large across the heavens. Bees are reported to be in fairly good condition, though many colonies are short of stores. Eucalyptus trees are in full bloom, and whenever the weather permits, nectar and pollen are coming in freely. Manzanita is also in full bloom along the coast. Willow is also yielding a modicum of spring feed. Sage has begun to put on new growth. If the promise of more rain is fulfilled, there will be a larger crop of honey on the coast this year than last. This prediction is based on the fact that, although there has not been as much rain to date as there was last year, soil and foliage conditions are better than they were last year at this time.

R. M.

Another Grand Old Man in Beekeeping



Above is a picture of Mr. D. D. Updyke, of Downing, Missouri, and his wife. Mr. Updyke has been a close observer of bees for over sixty years, having used frame hives and Italian bees since 1873.

When he was a boy he purchased his first colony in June, 1869, at the

age of fifteen. In 1871 he bought five. In the next five years he increased to fifty-eight colonies. His first Italian queen was bought from H. A. King, of New York City. He paid \$5.00 for her and it was the first Italian queen brought to Scotland County, Missouri.

An Easy Way to Release Attendant Bees from a Queen Cage

By Alfred H. Pering

I USED to have trouble in releasing the attendant bees received with queens, and have lost queens that have escaped from the cage, although they do not fly far and seem to be weaker than when flying from a hive. The one, the only one I ever allowed to escape out of doors, was recaptured by sticking the empty cage on the tip of a long bamboo pole and holding the cage out very near to her where she had alighted on a broad maple leaf. She crawled immediately upon the cage and I carried her thus into the house, where I caught her upon a window and replaced her in her cage and then into the hive.

After that experience, for some time I did not attempt releasing the attendants. Then receiving what I considered an extra fine and valuable queen and had then just reread advice to remove the attendant bees before introducing, I sit "meself" down to study a safe method. I do

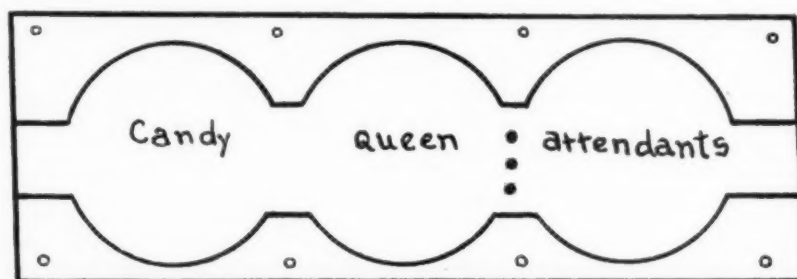
not know as I have the best plan, but with me it works, so here it is: First trial was to use common ordinary tin pins stuck into the back of the cage through the wire covering between the two compartments occupied by the bees. Wait until the queen passes into the compartment next to the candy, then stick two or three pins through the wire into the wood so as to stop the passage of

the bees. (See three dots.) I then let the attendant bees out that are in the other compartment by removing the screen from over the passage at end of cage. Of course some attendant bees will more than likely be caught with the queen which will have to be allowed to pass out. Do this by withdrawing the center pin just at the right time; be careful and retain the queen until all are out. The attendants may be a little slow in passing through the hole in the end of cage. It will hasten matters to remove the two nails at end of cage and lift the screen wire a little and close down again when bees are out.

After using the pins a few times, I found one pin and a staple made of wire was handier. If one does not care to be rough on the workers (they are lost anyway), you can cripple and draw the workers out with a crochet hook. This is quicker, but hard-hearted. The cardboard on the end of the cage, over the candy hole, should be removed. The printed directions say to not remove. This is a mistake. I have lost queens when candy was too dry. The cardboard would not be moistened enough and the outside bees would seal up the cardboard tight. It is all right to use this cardboard while in transit to keep the candy in while soft and to prevent the candy from escaping and daubing up other mail while in transit. Take the cardboard off and, if candy is dry, jab it full off holes with a pin and soak that end of the cage in water for a minute or two. The wood should be moistened so as not to absorb the moisture in the candy. Cage should be full of attendant bees to prevent injury to queen in rough handling while in the mails. Florida.

How Fast Bees Travel

Twelve bees were turned loose in a field two miles away, at the same time as twelve carrier pigeons. The first bees to arrive back beat the first pigeon by a quarter of a minute. Three other bees beat the second pigeon; the balance of them arrived at the same time as the rest of the pigeons. The statement does not say how long they were on the way.—Apiculture Francaise.



Pins show how queen is penned away from attendants so the latter may be easily released from cage

The Glory of the Sage

By William J. Oates

FOR some years past the annual flowers have failed to give a flow of nectar sufficient to build up the colonies, and sage ranges have been very poor, but now the hills are one galaxy of color. Blue and white Phacelia (wild forgetmenot) is the source from which most of the honey is being gathered at present. The hillsides are carpeted with the gold of the poppy; with the blue and pink of lupine. California is aglow in a riot of color and looks like a million dollars.

An outsider would think that conditions were ideal and that bees should be storing honey in skyscraper hives. This is a superficial judgment based upon appearances.

The sage, from which our surplus is gathered, does not look so gay. Its vitality has been impaired by many seasons of short rainfall, and a great deal more rain will be necessary in order to make a fair crop of sage. Possibly before this article appears in print the story will be told as to whether there will be a crop or nothing over which to become excited.

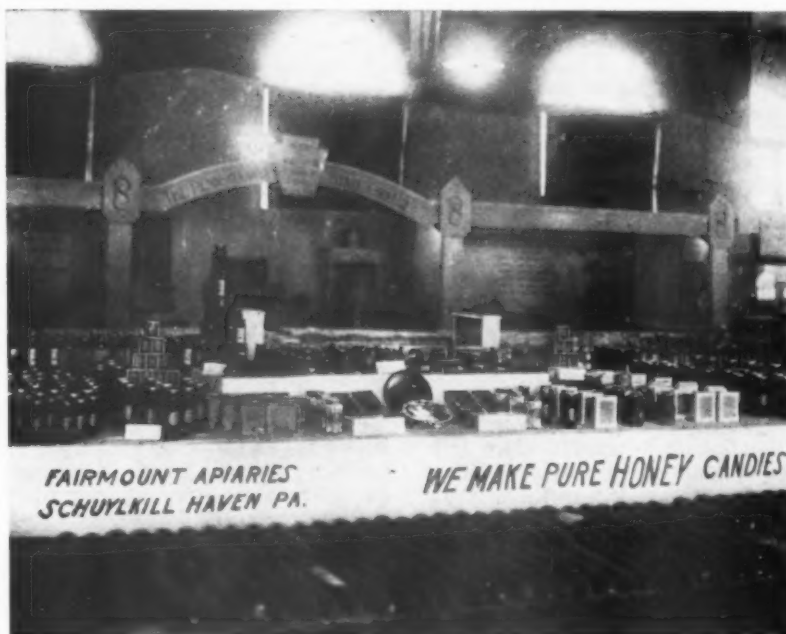
Quite a bit of interest is being manifested in a proposed pooling of honey in another cooperative marketing endeavor. For my part, I cannot see any advantage to be gained, unless it is preceded by an intensive advertising campaign to sell to the public the food value of honey. As yet only feeble efforts have been made to push the product in other than the usual channels. Personally, I look upon the kind of cooperation proposed as adding one more charge against those producers who are selling in the same markets, and to the same brokers, as the prospective company would sell.

Ours is a peculiar business; we have so many producers who are distributors to the consumer as well. Much of our trouble lies right there!

Sage Honey

I have told you something of the glory of a California springtime, and I get a real thrill out of it; yet going into stores and roadside stands one sees all kinds of honey being sold as California sage — anything from horehound to blue gum; and beekeepers buying sweet clover honey and labeling it "Mountain Lilac"; Nevada alfalfa comb honey being sold all over the state of California as "Nevada sage comb"; star thistle honey being offered as orange and sage. This gives me a pessimistic outlook for the business. If you wish to educate the buying public to appreciate an article, one cannot start out with deception. It would be better that a uniform article of blended honeys, such as the large bottling companies

Winning Exhibit at Penn. Farm Products Show



Pennsylvania held its fourteenth annual Farm Products Show January 21 to 24, inclusive, at Harrisburg, Pennsylvania. This show has grown from one covering a floor space of 10,000 square feet to 130,000 square feet. Its attendance has grown from 10,000 to 60,000 people. This show has been held in buildings wherever available, scattered throughout the city. This was an inconvenience, but the best that could be done. The many farm organizations, including the State Beekeepers' Association, requested the state to put up one large building to house the Farm Show. At last it is under construction, with a floor space of 330,000 square feet.

The beekeepers have been doing their part to contribute to the show by making fine displays of honey and honey products. Premiums put up

by the state are worth while, which is an incentive to the beekeepers. My exhibit took first as an individual exhibit, which exhibit in turn gave our county first place. For several years I have had a booth at the Farm Show, selling both honey and honey candies. Sale of honey candies was on the increase, although we had competition this season for the first time, with other candies not made from honey. We are picking up steady customers, as they can rely on our products. A fine display of honey is an advertisement for the beekeeper which leads to inquiries and sales. We got seventeen premiums besides the first for our county, Schuylkill. We had ten first prizes, two second, three third, and two fifth. Cash value, \$37.75, besides the \$25.00 for the county.

D. C. Gilham, Pennsylvania.

offer for sale, were offered the public than a falsely labeled product.

Honey sales can be multiplied upon the basis of real effort: advertising first, good salesmanship second, and honest presentation of the product. Nowhere in the world is honey sold so cheaply as in America. In Europe, where the same number of people consume four times the amount of honey consumed in America, the cost is doubled. Here the syrup manufacturer has the business, and he is justly entitled to it, for he has built it up by consistent advertising, good salesmanship and honest presentation. (Look on each can and see for yourself.) Honey is superior to most of the syrups on the market; honey has a basis for good selling talk founded upon fact;

and if it were backed up by a consistent advertising campaign and the output honestly labeled as to origin as well as weight, there is no doubt in my mind but that the market would increase amazingly, particularly the market for sage honey, which has the finest flavor of all the honeys, barring none.

I believe the trend of the times is toward something new, and even startling, for the merchandising of honey; a movement toward putting it in its rightful place of preeminence as a sweet, above all other sweets, in this land of a candy-eating people. Honey is health-giving and heat-producing. It provides a harmless stimulant of concentrated sunshine, and is Nature's own elixir of life.

What Kind of Publicity?

By Robert B. McCain

WHETHER it is called "advertising," "propaganda," or "publicity," it is one and the same thing. Its end and aim is to compel people, by the very insistent force of repetition and emphasis, to think in terms of the thing that is exploited. Whether it is soap, or engine oil, or perfume, or breakfast food, the object is to make people think in terms of a trade name. We have all seen what was once an unknown name evolve, under skillfully directed publicity, into a household word.

But there is a decided difference between legitimate publicity and the thing that circus owners and prize-fight promoters call "ballyhoo." An outstanding feature of modern publicity campaigns is the foundation of fact upon which they rest. No reputable advertising agency would undertake to exploit a commodity that did not more than make good the claims of the advertisements. These wise publicity engineers leave the ballyhoo to the promoters of the kind of entertainment that Barnum gave.

In exploiting honey as a pure health food it is not necessary to try to imitate the claims of all the current health-food fads; neither is it wise to try to satisfy the demands of the doctors and the dieticians. Vitamins seem to be in style just at present; but if we try to find all the vitamins in honey, by the time we discover A, B and C the doctors will have got down to X, Y and Z and we will be just as much out of style as ever.

Honey is simply a good food, and its exploitation should be like the style in women's skirts—long enough to cover the subject and short enough to be interesting.

To people of ordinary intelligence, or more than ordinary intelligence, bee lore is intensely interesting. Those who exhibit bees and honey at fairs and stores usually find it impossible to answer all the questions that are asked about bees. Newspapers eagerly accept bee stories, and there is not a doubt that these stories are read with interest by people in all walks of life. But it is unfortunately true, also, that the majority of newspaper stories are so far removed from the truth, as far as bee behavior is concerned, that they give the up-to-date beekeeper an intense pain. The reporters who write these stories evidently think that bee lore can best be expressed in ballyhoo language. Publicity of that kind may furnish a little amusement to the casual reader of the daily paper, but it is doubtful if it helps to popularize honey. That "rum honey" canard which emanated from Norfolk, Vir-

ginia, some time ago is a case in point.

But the newspapers are not the worst offenders in spreading misinformation about bees. Some of the leading popular magazines of the country have published articles about bees that have no foundation in fact. For example, one of the most widely distributed non-technical magazines, published in America, printed an article in which the author, who claimed to be a beekeeper, made the statement that he had invented a hive with a reservoir in the upper story. Instead of building combs and storing honey in the usual manner, the bees deposited their honey in this reservoir, and all the beekeeper had to do was to dip up the honey with an ordinary dipper. A photograph of the hive, reservoir and all, was printed with the article.

The editor was told, by letter, that he had been humbugged, and he was honest and fair enough to make an investigation. When he learned the truth, he answered, courteously, acknowledging the mistake in printing anything of the kind, and declared that never again would he accept anything sent in by the author of the fake story. He might have said, also, that he would probably never print anything about bees or honey. A careful search of his magazine rarely discloses anything on the subject.

Another article appeared in a magazine that takes front rank among popular scientific publications of the English-speaking world. In this article the author, who also claimed to have made a scientific study of bee culture, described the process of comb building by saying that the bees first built a "curtain of wax" over the frame and then proceeded to fashion the honeycomb from this curtain. This particular article was illustrated with cuts that had been borrowed from a leading bee journal. The pictures were excellent, but they were labeled in such a manner as to destroy their value.

This editor also received at least one letter, to which he made courteous reply. He promised never to do it again; and he hasn't. In justification of his act in printing the article in the first place, he said that the editors were not beekeepers and were not able to detect the fraud. It was a fine opportunity for a real beekeeper to apply for a job on the editorial staff, but no one seems to have been appointed.

One thing must be said in behalf of the editors: they are honest and fair in admitting the error when once convinced that a mistake has been made; that is, to the individual who

takes the trouble to point out the error they will admit it, but not publicly. But an acknowledgment of this kind does not correct the wrong impression; it only makes it harder for the truth to get a hearing.

One sure method of giving out authentic information about bees and honey is with the use of a honey exhibit and one or more observation hives. There is nothing original in this suggestion, but original ideas can be incorporated to make the demonstration more attractive. The ordinary one-story, or story-and-a-half, observation hive can be used effectively, provided it is placed in a good light and at the proper height for easy observation. But this type of hive has been used so much that there is danger of its becoming commonplace.

The observation hive shown in the picture will attract attention because it is different; and the longer the observer looks at it the more interested he will become and the more questions he will ask. Instead of a single large comb running lengthwise inside the glass walls, this hive has a dozen or more short combs, about an inch wide, built directly to the inside surfaces of the glass walls. There are two panes of glass on each side of these combs, with a dead air space of about a quarter of an inch between them. When so arranged, the bees will build directly to the inner surface of the glass, and many of the cells will have an outside wall of transparent glass. The strip of comb in the center picture shows cells that are fastened to the glass wall at their bottoms.

With a hive of this kind, the bees can be seen at work, building comb, storing honey and pollen and feeding brood; and there is a full clear view of all their actions. When this particular hive was stocked, the space at the left end, just behind the microscope in the picture, was left vacant. The white comb, which can be plainly seen, was built by the bees after the hive had been set up in the living room of the owner's dwelling house. The bees adapted their plans perfectly to the general idea of the beekeeper, only they did a much better job than he. The comb is straighter and more perfect in every way than those that were put in by the beekeeper. The whole process, from wax scales, as they were taken from the little pockets, to the finished comb, could be clearly seen. A large reading glass assisted when the object under observation was very small.

With a hive of this kind, together with a few copies of the American Bee Journal and some standard books on bee culture, the demonstrator is pretty well equipped to meet the volley of questions that will be fired at him. A good high power microscope is also of great help in showing ob-

jects better than they can be described. The low powers of an instrument of this kind are better than the high power. Children usually stage a mob scene when school is let out, and it is a good idea to set a guard over the microscope. But these children are potential honey buyers, and it is just as well not to call the policeman to get them away until you feel yourself sinking for the last time.

The demonstrator usually has the floor and is listened to with close attention, but occasionally an old fellow comes in who does not want to be told anything. On the contrary, he insists on telling the demonstrator, and everybody else, how things were, and are, and always will be, in the bee world, world without end, amen! For example, there was the man who took an exceedingly long time to prove the beehives should be placed at the bottom of a hill, so that the bees could carry their loads of nectar downhill. It saved the bees a great deal of unnecessary labor, and they lived much longer. Well, you can't prove that it isn't so. Just let him rave!

Then there was the fellow who wanted to know what the little holes in the end bars of the brood frames were for; and when he was told they were used to wire in the sheets of foundation he asked if wire-worms laid eggs in the holes.

A certain woman made the demonstrator's heart glad by coming to his house to buy a can of honey after having sampled it at the demonstration. After she had paid for what she bought, she exclaimed: "My, but that honey was good! It tasted just like wild honey!" Even now the demonstrator doesn't know what she meant by that. But what difference does it make? So long as she liked it, no harm could be done in thinking the honey was "wild."

But the point is that there is no lack of interest in bees and honey. The main thing is to be prepared to give out correct information.

California.

A Visit to Enrico Tortora

By W. S. Pender

I spent a morning, during my trip through Europe the past year, with Mr. Enrico Tortora in Italy, to see his way of queen production. He is right up to date and has many fine Italian queens.

He says he cannot sell a queen unless she is very yellow. This is noticeable in the bees which are not so evenly marked and narrow-banded as the original Ligurian bee, the tendency being to broader yellow bands.

I saw many young queens, almost all of them yellow to the tip. Queen-cells are started in hives with laying

queens, about thirty colonies being used for the purpose. The hive is divided with a vertical queen excluder, the queenless portion being in front and occupying four combs, Langstroth size the long way downward. Six grafted cups are given each colony having sealed cells.

In twenty-four hours the accepted cups are placed nine on a bar and returned to the bees and further cups given to those ready for them. Every hive is kept at work starting and caring for completed cells.

Mr. Tortora appeared to get 75 per cent of the cell cups accepted. All this work is done under cover, the hives forming one wall of a building, being as close together as possible. Four-frame nuclei, having frames about 8x7 inches, are arranged in rows out in the open, mostly on stands about 18 inches high, having a good roof and covered with a heavy, flat roofing tile.

Neatness, cleanliness and thoroughness are evident right through. No veil is used, and the only smoke is from a ferrule-bound torch of scrim rolled up to about an inch in diameter. A slight puff on this is enough to quiet the bees. As the roll is consumed a little more is twisted through the ferrule.

Australia.

Water for Bees

A great many people imagine that bees need water and that it must be supplied to them when under confinement. Bees do need water to make the pat for the brood; but outside of that, the grown up insects do not need any water at all, unless their food is hardened or crystallized.

Our own experience on this matter was confirmed by the experience of the famous beekeeper J. S. Harbison, who imported bees into California in 1857. He shipped 67 colonies of bees from New York to San Francisco on November 5th, which arrived in San Francisco, via Panama, on the 30th of the same month. They were supplied with stores, but he gave them neither additional food nor water during the entire trip.

We now find an item, in "Bees And Honey", by J. Skobvo, quoting the experience of Edward Kellner in transporting queens from Cheko-Slovakia to Costa Rica. The itemized report of the trip mentions giving water to the bees of four of the cages on the thirtieth of the forty-two days of the trip. On the following day those bees were found "more excited and noisier than the 'rest.'" In our own experience, in importing queens from Italy, the bees that were supplied with water for the trip died on the way or arrived in much poorer

shape than those that were kept on honey alone or on sugar candy slightly moistened.

Burleson Vigorously Defends California Law

Mr. T. C. Burleson, a prominent and well-known beekeeper of Colusa County, is credited by the newspapers of that part of the state with a vigorous defense of the California foul-brood law and its methods of enforcement. It appears, from newspaper accounts recently at hand, that bees and equipment infected with brood disease were moved without permit and in defiance of the law and the local inspection officials. The parties alleged to be guilty of this infraction were haled into court, but were later released after habeas corpus proceedings. The Colusa "Herald" quotes Mr. Burleson as saying: "Beekeepers here are well satisfied with the result of the county foul-brood eradication carried on last spring. Burning the diseased bees and contaminated material contained in the hives was the method used."

This same publication is authority for the statement that C. I. Graham, of Colusa, has expressed his intention to take the case to the supreme court in order to test the statute. Judge Rankin, before whom the case was tried, is reported to have said: "On the face of this case, I can't hold out much hope for you. If this bee act is illegal, apparently so are all the other similar regulatory acts."

Mr. Fred Hanson, San Diego County inspector of apiaries, has announced the policy of obtaining the written consent of the owners of infected colonies before destroying them.

R. B. M.

Strawberries a la Honey

Well-cleaned, fresh berries; warm, mild honey. Slice berries through once, if large. Arrange in serving bowl or individual glass sherbet dishes and drizzle warm honey about. For medium tart taste, allow two tablespoons warm honey to each glass sherbet dish of berries served.

Cornflake Muffins (18 Muffins)

- ¾ cup cornflakes
- ¾ cup graham flour
- 1 tablespoon sh. rtening
- 3 tablespoons baking powder
- 1 cup milk
- ½ cup honey
- 1 cup white flour
- 1 egg

Mix melted shortening with honey, add to one egg beaten lightly, then add milk. Stir in dry ingredients, which have been thoroughly mixed. Bake in well-greased tins thirty minutes at 350° F.

Bees Pay for Tuition, Books and a Higher Education

Clarence A. Liebelt, Ohio.



And he proves his love for his friends

Working with one colony of hybrid bees as a hobby several years ago, Charles Bangham, Clinton County, Ohio, young man, has turned this



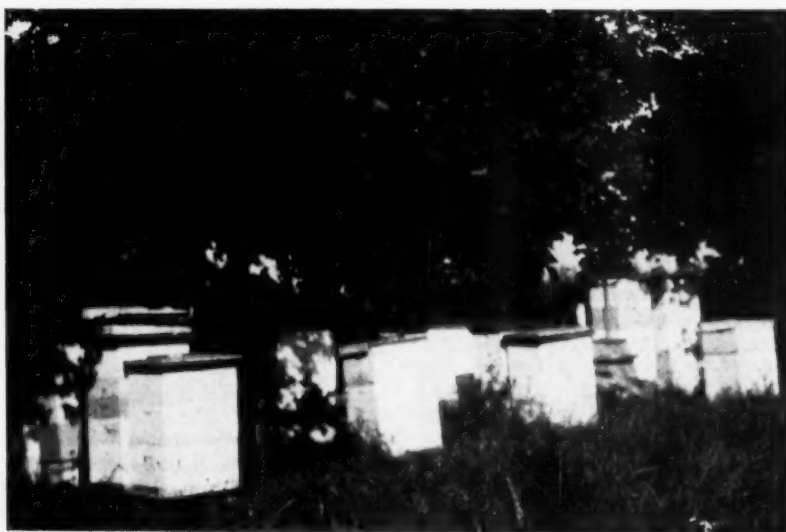
Charles Bangham pays his way with bees

hobby into a business netting him better than \$1,000 a year. Young Bangham graduated from the Ohio State University last March.

He became fascinated with bees when he was a boy in school and decided finally when he went to college he would study beekeeping. So as a boy he pursued his hobby, becoming more fascinated as the years went by. Now he is entering Cornell University to pursue further work in the study.

Bangham's hobby has paid his way through school and also financed an education for his brother.

The picture shows about how familiar Charles gets with his bees. He has lately had this picture incorporated into his honey labels. His bees know him pretty well, don't they? He claims this is easy. Just roll the bees in a paper and dump them over your head.



Bangham's apiary, where the school funds are produced

An Iowa Bee Tree in 1748

By Dr. L. H. Pammel

April 6, 1809. "Walked all day, and in the afternoon met the hunters, who had found a bee tree and were returning to the boat for a bucket, and a hatchet to cut it down. I accompanied them to the tree. It contained a great number of combs and about three gallons of honey. The honeybees have been introduced into this continent from Europe but at what time I have not been able to ascertain. Even if it be admitted that they were brought over soon after the first settlement took place, their increase since appears astonishing, as bees are found in all parts of the United States; and since they had entered upon the fine countries of the Illinois and Upper Louisiana, their progress westward has been surprisingly rapid. It is generally known in Upper Louisiana that bees had not been found westward of the Mississippi prior to the year 1797. They are now found as high up the Missouri as the Maha nation, having moved westward to the distance of six hundred miles in fourteen years. Their extraordinary progress in these parts is probably owing to a portion of the country being prairie, and yielding therefore a succession of flowers during the whole summer, which is not the case in forests. Bees have spread over this continent in a degree, and with a celerity so nearly corresponding with that of the Anglo-Americans, that it has given rise to a belief, both amongst the Indians and the whites, that bees are their precursors, and that to whatever part they go the white people will follow.

"I am of the opinion that they are right, as I think it as impossible to stop the progress of the one as of the other."

Honey Advertising Stunts

By W. H. Mayes

During the week of March 13 to 20, when the Texas Theater at San Antonio was giving the picture show entitled "Honey," Louis Beidiger, a local honey producer, had an exhibit in the lobby of the theater that attracted much attention from the thousands who attended the show, practically every man, woman and child who entered the theater stopping to study the exhibit. It contained combs of real honey, with real honeybees with their queen.

He could have handed out thousands of small advertising sheets and price lists to much advantage, thus showing the public that pure honey may be obtained at reasonable prices and that it is the best and most wholesome of all sweets.

In another Texas city a bee man made an attractive exhibit of his wares in the window of the Chamber

all day,
hunters,
d were
bucket,
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of Commerce, which was located right in the heart of the business district, the Chamber of Commerce being glad to allow this to show that honey was one of the products of that section. The result was that the honey producer sold his entire supply of honey and established a permanent trade with many new customers.

Local banks in the cities and towns would be glad to assist any local customer engaged in honey production by allowing space for exhibits in their bank lobbies for brief periods of time, and this would be the very finest honey publicity.

Often honey sales are limited because the producers are poor advertisers and are in close competition with other kinds of sweets that are extensively advertised. Producers who sell honey through local grocers should insist that the honey be advertised along with other items handled in the groceries. The grocers are not averse to doing this, but because of the limited sales as compared with sugar and syrups, they too often overlook the smaller item of honey in their newspaper advertisements.

Where producers sell direct, they should seek every opportunity to bring their products favorably to the attention of the public, and where they sell honey through the grocers, if they used some such publicity methods as those mentioned, they would secure more cooperation from the dealers and far greater sales. Too many beekeepers seem to lose their interest in their business before they cash in on it.

Do Bees Get Water from Corn?

After reading the article about bees getting honey from corn, on page 80 of the February number, I would give my views, based on observations of bees working on corn as a possible source of nectar. Here in Manitoba corn is cultivated in gardens for fresh cobs and also as fodder and silage, the latter making the greater patches.

While I have seen bees by the thousands on corn, it always was in the early part of the day or after a shower, so I came to the conclusion that the bees had found a water supply of easy and convenient access.

Corn has leaves so shaped that they gather and store water from the morning dews or from rains. I have tasted this liquid and did not find it sweet, and only tasting like green corn. Bees will work on corn before it has come into flower and become a possible source of pollen.

Sweet clover is at its best here as a honey source when corn is in flower.

G. E. Bissonnette, Man., Canada.

Skunks Caught With the Goods



A bee-eating skunk held in the trap where it was caught

During the fall of 1929, skunk depredations became serious in the apiary of the University of California at Davis. The bees until then had been unmolested since 1922. This past year was abnormally dry until the first of December, so that the

trances. A long pole was attached to the trap for lifting the culprits into a barrel of water to drown. No odor was ever noticeable about the yard.

The stomachs of those caught (both male and female) were full of bees in "pure culture." That many of the bees sting while being eaten is evidenced by the large number of stingers found in the palate, tongue, and throat of the skunks. No stings were found imbedded in the remainder of the intestinal tract. By far the larger part of the bees from the stomachs still contained the stinging apparatus.

The two accompanying photographs tell the story. The first is of a skunk in the trap at the hive. The bees are made to come out by scratching the hive and earth in front. The second shows the dissected upper jaw and palate with stings imbedded. A total of sixty-five stingers were counted in the mouth and throat area of this specimen. The poison did not appear to cause any swelling, and only a slight red blotch showed about each wound. In fact the sensation may have been pleasant, since the skunks came back night after night to repeat the experience. Perhaps their taste for the hot sting is developed like that of the human for dishes excessively hot with pepper.

G. H. Vansell and T. I. Storer.

Los Angeles Banner Market

Southern California not only leads in the production of two of the choicest honeys to be found anywhere in the world, but the port of Los Angeles, in recent years, has assumed the lead over all other export harbors in the matter of honey shipments for the foreign trade.



The skunk's palate, in which some of the bee stings are seen

ground made very hard digging for skunks. As soon as rains came, no more trouble was experienced. This leads me to think that the skunks could then dig satisfactorily for their usual food insects.

Some of the skunks were caught in No. 1 steel traps at the hive en-

Our Own Honey—and Other Honey

By Dr. John Anderson
Editor "The Scottish Beekeeper"

PERHAPS some readers of the article, "Tit for Tat," on page 601 of the December American Bee Journal, may have failed to note that the only words quoted from "The Scottish Beekeeper" were, "One Scottish firm imported last season twelve thousand Californian sections, and sold every one." The doubt as to "the genuineness of their contents," and the description of British honey as "the vastly superior home product," were additions for which our British contemporary, "The Beekeepers' Record," was entirely responsible. Here, as in many other directions, S. B. and the B. R. hold very different opinions.

In America, with its variety in climate, soil, vegetation, and other conditions, there must be equal variety in honey, and we cannot expect everybody to like every kind of honey. Even in this tiny country there is great variety in the honeys produced. When customers have clamored for second supplies of honey from the College Apiary at Craibstone we have sometimes given them honey produced perhaps less than a hundred miles away by some of our pupils. In every case they have detected differences and next year have demanded "Craibstone" honey. I do not think the Craibstone honey was any better, but the customers liked it better because they had got used to the taste of it.

I was able to oblige a Canadian visitor to Scotland by getting him some heather honey actually produced in the Scottish Highlands. He was greatly disappointed with its appearance and taste, and could not understand why this honey should sell at such a fancy price. To him it seemed only a dark low-grade honey, comparable to cheap Canadian buckwheat honey.

When he paid us that delightful visit in 1926, Dr. E. F. Phillips in just one respect appeared to us to be "an unusual American." We had supposed that they were great hustlers, anxious above all to get there quick. It was a surprise, therefore, to discover that in the telling of stories Dr. Phillips was leisurely as a Scottish Highlander, and gave us opportunity to enjoy to the full the delightful flavor of his yarns. We shall not soon forget his diverting account of how Francis Jaeger surprised the innocent Austrian immigrant, and how in return the innocent immigrant astonished the large-hearted professor of beekeeping.

The idea that your own honey is the best in the world is comparable to the notion that orthodoxy is your doxy while heterodoxy is the other

fellow's doxy. The gentle raillery of Dr. Phillips cured many of us of this delusion, and without any hurt to our amour propre.

He had traveled over important districts of beekeeping Europe and had listened to many enthusiasts describing the honeys produced in their home towns. In Scotland, where his pilgrimage was to terminate, he gleefully informed us how convinced was the beekeeper in every country and in every district that the honey he produced was the best in the world. In each case he concluded with, "But we know that this is not true," and the audience applauded. Then he went on to say that in Scotland it was thought that Scottish honey was the best in the world, remarking parenthetically, "And we know that this is true." The Aberdonians in particular, who claim to have a very keen sense of humor, enjoyed this leg-pulling very much indeed.

The superiority complex hinders progress quite as effectually as too much humility, and we do not wish to labor under either handicap. The number of American books and periodicals read by beekeepers on this side would indicate our belief that we have much to learn from our cousins over the water. There may be a few things which we sometimes think—perhaps foolishly—are better over here, mainly perhaps because they are a little older.

In more than one of her speeches Mrs. Phillips scolded us roundly because we so consistently maligned British weather. Most Americans seem to have been told that in Britain it always rains unless when it snows. The fact is that our weather is delightfully varied and we have very frequently the luxury of sunshine after rain. It is, however, a bit inconvenient that we cannot fix a day for a picnic or a garden party with any assurance that rain will not entirely spoil our enjoyment. Dr. and Mrs. Phillips happened to strike one of our very best summers, with hardly any rain at all—much less rain indeed, as we heard afterwards, than had fallen at Ithaca in their absence.

To return to British and American honey. We will take all the honey you like to send us, our only regret being that the American beekeeper gets only 9 or 10 cents for honey that costs the British consumer about 30 cents. Imported honey, now that it is "marked" as imported, does not interfere in the least with the sale of British honey. The latter is sold almost as soon as it comes off the hives at a price round about 36 cents per pound. Our home honey never

appears on the wholesale market, and the only middleman who handles it is the retailer who buys from a beekeeper to sell to the consumer. Usually the whole crop is sold in a month or six weeks after it is removed from the hives, and no beekeeper ever has any old crop left.

In accordance with her principles, Britain admits honey free from any country in the world, even from New Zealand, that will not allow a single pound of honey to be imported into New Zealand. America is one of the chief honey-producing countries in the world, and taxes imported honey, yet we send a little Scottish heather honey to America—a little, because the demand at home greatly exceeds the supply.

Let us go right ahead, each country supplying to the other what that other can less advantageously produce. Sweet clover and alfalfa do not grow here, and America has no heather. I hope that we shall continue to import American honey by the hundred tons, but I hate to pay 32 cents for it when I know the American beekeeper is getting only 8. Aberdeen, Scotland.

Bloodroot



A good theme for a botanist-poet might be supplied by the bloodroot, that now stars our woods. Such a one might well hail the little white flower as a "modest poppy" that

"Crowds back its carmine blushes to its root
And turns toward all ardors of the sun
A front demure and white as any nun."

For the bloodroot is really a close cousin of the poppy, and the red that its relative flaunts on its face, this little white spring blossom expresses only in its blood-colored sap. It would not be exactly correct, however, to say that the red sap is found in its root, for the thick underground part of the plant is really a rhizome or subterranean stem, from which the true roots, as well as the over-ground stems, take their rise.

The sap is somewhat thick and milky under its red color, which is another point of kinship with the milky-juiced poppy tribe. And as the juice of the poppy contains a poisonous principle used in medicine, so also does the juice of the bloodroot.

Under the Latin name "Sanguinaria" the dried rhizome used to find a more or less prominent place on drug gists' shelves; though it is little used now.

The bloodroot is one of the small number of native American wild-flowers that needs little warning against reckless bouquet-gathering due again to that same thick, red, rather irritating juice. Children picking flowers in the woods sometimes take a handful of its attractive, though short-lived, white flowers; but the appearance of their hands and dresses usually causes their alarmed mothers to place further bloodroot gathering under interdict.

Resolutions Adopted at Southern Conference

Whereas, Persistent efforts are being made to nullify and destroy the food and drugs act of June 30, 1906, by the introduction into Congress of bills to permit the use of corn sugar in food without declaration of its presence on the labels of food packages:

Therefore be it resolved, That the Southern States Beekeepers' Conference, in assembly at Baton Rouge, February 26, 27, 28, do hereby reaffirm the objection to all such legislation, and that we ask all senators and representatives from the states covered by the organization to watch for and to work ardently against all such bills, and that we ask the State Farm Bureau Federations of the states covered by this organization to use their influence against all such legislation.

Resolved, That we express our thanks to the members of the staff of the Louisiana State University and to that of the Southern Bee Culture Laboratory for their efficient work in making this conference a brilliant success.

Resolved, That we commend the efforts of the Southern States Bee Culture Laboratory in bringing scientific investigations to the aid of practical southern beekeeping.

Dr. E. F. Phillips,
Dr. C. T. Dowell,
Kenneth Hawkins,
Resolutions Committee.

A Novel Mouse Trap

A few weeks ago one of the Professors here at the Agricultural College, tried in vain to capture a mouse by means of a trap, but without results. He finally placed a cup of honey on the floor and the next morning the mouse was caught in the honey. Try that on your mice.

Don B. Whelan.

Notes from My Experience in Saskatchewan

By H. J. Minall

SINCE there is not much material in your paper about conditions in this western province, a few jottings from my notebook may be of interest to other beekeepers.

Regarding the removal of bees from the cellar, I find that they were taken out this year on the evening of March 28. A few were taken out ten days before. They appear to have wintered well, and some were still quite heavy. A few were apparently short of both bees and stores.

The cellar was kept much warmer than in previous winters and too many bees came from the hives. Mice appeared to bother them a little. The thermometer often showed over 55 degrees and bees would come outside in clusters. (Proper cellar temperature is 42 to 45.—Editor.)

When moving from the cellar, most of the hives were lifted without smoke and I was badly stung. The weather was fine, about 60 degrees, and sunshiny, but that night it snowed and continued for three days, the temperature going down to 15 degrees and a strong wind developing.

On April 4 we had a heavy snow and a blizzard, so that the hives were covered with snowdrifts. On the seventh I opened all of the entrances; some of the bees flew and they perished on the snow. On the ninth of April we had another heavy snow during the night, covering the hives again with a wet blanket.

On April 10 I received six two-pound packages from C. S. Duncan, Mangham, Louisiana. They were in poor shape. I put those alive into hives in the shed. Very few bees were able to fly. I brought them later into the house, near the stove, with the entrances of the hives screened, and there they warmed up.

There was one interesting experience in connection with these packages. One of the cages containing the queen with her attendants dropped in the package and the queens and bees seemed to be dead. I put them on the window sill in the bee house and left them there until evening, then took the cage to the kitchen. After a few hours the queen showed signs of life, so I caught live bees from the hives that were still there and put them into the cage with her. During the night the bees clustered around the cage and the queen soon became very lively. So, when is a bee dead? The queen had been in freezing temperature for over four hours. I put her and some bees into an observation hive.

During the fore part of April, up until the eighteenth, we had varying weather, but generally too cold for much flight. On the eighteenth the bees were flying well, and so I exam-

ined all the hives, the first time since taking them out of the cellar, finding them in good shape—some very strong. Four colonies had drone-laying queens, which apparently had been raised late the previous fall and had not mated. Of course, I united these with others. None of the colonies were out of stores, although some of them were light.

On April 22, although we had had a cold, backward spring, I noticed the first pollen being gathered in small loads. There had yet been no real good day to work—still freezing at nights.

On May 1 the weather was warmer, so I went through the hives more thoroughly, finding them in good shape and with plenty of stores. In one colony I found an old clipped queen and a large younger one, both working. They must have wintered together, as there had been no weather for queen-rearing so far.

This year the spring was very late and backward, so that by the first of May many farmers had not started to seed. We were still having to use a heater in the house and began to wonder if we would have spring during the summer.

On the eighth of May I received twenty two-pound packages of bees and queens from J. E. Wing, of California, which arrived in good shape with only two queens out of their cages. I got the twenty all nicely lived and fed and noticed that the other bees were bringing in at least two kinds of pollen. It seems strange that there is pollen to be had when it freezes every night and ice about an inch thick on the water in the morning. On the ninth of May we had another flurry of snow following a rain. Real spring did not come until the middle of the month.

Some of the honey which I had held over for feeding, I was able to extract, giving me about three hundred pounds of fine honey, although these combs were stored in an outside shed during the winter in a temperature as low as 40 degrees below zero. They kept nicely, with only a little granulation.

Real summer weather did not come this year until the first of June, when the bees were working well and the new packages coming along fine, looking as though they would beat a lot of the wintered-over colonies.

I went to a lecture this spring, on the Arctic, by Vilhjalmur Stefansson, and judging from the pictures which he showed of the flora in the Arctic, it would be a good place there to have bees for a few weeks. We are to be congratulated that a town like ours is visited by one of so much prominence as Stefansson. This, of

course, is only possible through Chautauqua.

By the middle of June fine, warm weather was here, with occasional cold spells thrown in. During these cold snaps I noticed the effects on the brood, which became chilled, and some of my garden stuff showed signs of frost. A few of the colonies were quite strong, but most of them were about a month behind in strength. By July 8 heavy rains had brought on a great growth, so that

we have a good chance for a honey crop. I have tried so far several times to raise queens this season, but have not yet been able to do so.

(You do not say anything about that chilled queen. Usually, when queens are chilled in this way, or "refrigerated," as some people call it, they become either drone layers or non-laying. If this queen was still a good queen for breeding, it would be worth while to know it.—Editor.)

THE EDITOR'S ANSWERS

When stamp is enclosed, the editor will answer questions by mail. Since we have far more questions than we can print in the space available, several months sometimes elapse before answers appear.

HOW MANY BEES IN A POUND?

Please tell me how many worker bees, approximately, in a pound?

ILLINOIS.

Answer—It is usually figured that there are about 5,000 bees in a pound. The Abbe Colin, who was very accurate, wrote that bees weighed from 4,300 to a pound to 5,100, according to how loaded they were with honey. But for ordinary purposes, the number of 5,000 in a pound is about correct. You will find the statement on page 251 of the last edition of "The Honeybee."

In the "A B C of Bee Culture" there is a long letter from Professor B. F. Koons, of Connecticut, stating that the number of bees in a pound runs from 3,680 to 5,495, with the average about 4,800.

HONEY BUTTER

For some time I have been trying to learn how to make honey butter, and I see where it is already on the market by a Los Angeles company.

Could you give me any information about this product, as to how it is made and how it runs in cost with butter?

NEW YORK.

Answer—We have no recipe for honey butter. The only method I know to make what some people call "honey butter" is to beat honey at the time of granulation to make it granulate with a smooth grain like that of butter, instead of the coarse granules to which some people object. This is done on an extensive scale in some parts of France. But they do not call it "honey butter" there. Mr. Allen Latham, on page 229 of the American Bee Journal for 1941, described this process.

TO GET RID OF ANTS

I am having trouble with a small black ant; they are called Argentine black ants. They get in all of my hives. Can you give me a way or remedy to get rid of them?

ALABAMA.

Answer—Ants do not usually enter within the hive, but they nest often on top of it, where the bees cannot get at them and where they have the benefit of their warmth. But, in any case, they are a nuisance. If you can find their nest, pour boiling water into it.

If you cannot find their nest, you may keep them from getting on or in the hive by placing the hive on a stand supported by pins covered with coal tar or axle grease. In fact anything greasy will repel them. An entire shed may be protected from them in the same way.

STERILIZING FRAMES

I have about five hundred standard frames that were used for extracting on several colonies. Seven of the colonies later were infected with American foulbrood, lightly. The brood frames were burned, but these extracting frames were new and I have cut out the wax and scraped them clean, and I would like to know the best way of killing the germs, so they can be used again. Would boiling in lye water or burning lightly with a blow torch be effective? There is quite a lot of foulbrood up here, so I might not stay clean after I have cleaned up.

ILLINOIS.

Answer—Singeing the frames with a blow torch will make them perfectly safe, as the fire will burn any germs that might exist on them. I believe it is better than boiling them, and it is more expeditious.

Of course, your bees may get the disease again where they got it first. It is a good plan to enquire and find out whether there is any disease in the vicinity.

TO REMOVE BEES FROM BUILDING

In conversation with the manager of the J. C. Penney store, he learned that I kept bees. He at once became interested and told me that they have a swarm in the ceiling of the store. This is a one-story brick building, and when they close the opening outside the bees come out into the store, although some of them are usually in the store anyway. Is there any way to get these bees out without removing any of the ceiling? I would greatly appreciate any information you can give. If the bees were killed in there, would the honey in time soak through the ceiling. I would like to have the bees if could get them out.

IOWA.

Answer—The best way would be to ascertain the location of the combs and make an opening for the purpose of removing them. You might, of course, kill the bees, by using brimstone or some other stifling drug. But there would be some brood, which would probably give a bad odor when it died, and the bees themselves, if very numerous, would give some bad odor.

You might drive them out, by inserting smoke at one end, but this would be incomplete. On the whole, I believe that it will be advisable to cut out a part of the ceiling. You can then remove combs, queen, brood, bees and all.

FEEDERS AND FEEDING

I have feeder pails which have rusted so in one year that several are leaking already. Should feeder pails be coated on the inside with shellac or beeswax to keep them from rusting? If so, how would you go about doing it?

Is there anything else besides shellac or beeswax that you would recommend for coating the pails?

On page 238 of the May, 1930, number of the American Bee Journal you say in answer to Iowa that if he wishes to give his bees room between fruit bloom and clover he had better feed them. Now does this apply when combs are given as room? I suppose you mean that the colonies should be fed when they are given room with foundation during a dearth. It hardly seems to me that it should be necessary to feed when room is given with combs only, even during a dearth, if there is plenty of honey in the part of the hive the colony occupies already.

MINNESOTA.

Answer—1. We have never succeeded very well in coating the inside of pails. Beeswax shrinks in cooling and drops off. If we mix it with a little paraffine, it holds better. Have never tried shellac. Do not pour it in, but paint it on the inside. It will go farther and will hold better.

Tin is much poorer now than it used to be when the duty was not so high. But now our manufacturers are protected to such an extent that they do not need to furnish good tin.

2. Of course, if there is plenty of honey in the hive during the time mentioned, it will not be necessary to feed. But our experience at this time is that bees are breeding heavily and use up a lot of food. Use your judgment in the matter. We would rather sin on the side of a little extra feeding than on shortage of stores.

DEADMAN SUPER CLEANER

I have read quite a little about the Deadman super cleaner, but never understood exactly how they are constructed. I wonder if you could explain just how to go at it to make one?

MICHIGAN.

Answer—The frame upon which the hive of bees and supers are placed is made so that the bottom is absolutely tight, each tier of supers and the hive standing separately. The hive, as you could notice on page 410, is placed in the center, with an entrance outwards. The supers are connected with it by entrances cut into the cross pieces, on the underside of each cross piece, but on top of the floor, so as to connect each tier directly with the hive. This means that the two tiers that corner with the hive have the connecting entrances on the corner of each. In this manner each tier of supers connects with the hive, but does not connect with the other tiers of supers. The dividing strips are six inches wide, while the outer strips on the edge of the frame are only two inches. This permits of a space between the tiers such as is necessary to put covers on freely without interference with each other, and still allows each tier to overlap so that the communication with the main hive is free and yet there is no connection in a direct way between the tiers of supers.

I hope this is sufficiently explicit. If not, it may be advisable for us to give a wood-cut of the frame with the passageways well marked.

ROYAL JELLY

1. I have one colony of bees which swarmed on June 7, again June 11, and again on June 14. The latter went to the woods, taking the only queen in the hive, as far as I can judge. They acted very nervous when the hive was opened for inspection. I cut out a large queen-cell that had only royal jelly and others that contained only a brown substance which I thought was dried royal jelly. In neither case did it have any odor. Can you explain this? Also, the excessive swarming?

2. The second swarm that came off was hived, but they seem to be fighting and carrying out the young bees that came off with them, the ground in front of the hive being half covered with live and dead young bees. Can you explain what causes this?

3. The prime swarm was hived on the old stand and have nearly filled eight brood frames and ten small extracting frames in

super in eight days from white and alsike clover. Pretty good, I think.

INDIANA.

Answer—1. This is a case of what we call "swarming fever." When the bees have it, they swarm unmercifully. But in your case it is rather strange that they swarmed more than once, since you had put the first swarm on the stand of the old colony and put the old colony in a new spot. This usually prevents a secondary swarm. There is a way, however, to do away with the later swarming, or rather with the later increase; it is to return the second swarm to the mother colony after twenty-four to forty-eight hours. By that time the colony is quiet and the young queen which you return with the swarm kills the other young queens. That puts an end to further swarming.

As to the brown substance which you mention, it may have been the cast skin of the queen larva; but it may also be some of the dried up royal jelly, although the latter usually turns yellow, and not brown, when it dries. But there may be differences in it according to the food used by the bees in digesting it. Usually the royal jelly remaining in the queen-cell after she hatches out is consumed by the bees.

2. The fighting that you noticed in that second swarm would indicate that there was probably a strange swarm mixed with it. Sometimes several small swarms from different hives mix together and that causes more or less fighting.

3. It is not astonishing that the first swarm filled its hive so promptly, for it had all the strength of the working force of the old colony.

BUILDING FULL COMBS

I am using your wired foundation in Hoffman self-spaced frames, with oilcloth over frames. A swarm hived a few days ago cuts the foundation away at ends to pass around end of foundation. I would like combs built out to ends. Will leaving off the oilcloth until combs are built have any effect on their building to ends?

IOWA.

Answer—The reason why the bees cut the foundation on the ends is not because there is an oilcloth over the frames, or because of the shape of the frames, but simply because there has not been much honey at the time and they are not inclined to produce wax, which requires a great deal of honey. So they cut some of the wax from the ends of the sheets where they are not clustered and use that wax to finish the combs at the places where they are clustered. You will find that the bees will not do any cutting of foundation when the crop is good and wax producing plentiful. It is quite probable that those bees will again fill the spaces from which they cut away the wax, when they have built up their combs as much as they wish in the center of the cluster. The best method to keep bees from cutting away foundation is to give them a less quantity of it at one time and also to avoid giving much of it to them when the crop is short.

LABEL PASTE — SWARMING

1. I have been reading the American Bee Journal for a number of years, and find every number helpful. About this time last year I saw a recipe for a paste to stick labels on tin. I made one batch and found it very good, in fact the best I had tried, and I had tried several, including one kind ready prepared for that purpose. I thought I had preserved the recipe, but now cannot find it. As I remember it, it contained dilute muriatic acid and oil of wintergreen in addition to the base of flour or starch—I cannot remember which. I wonder if it would be asking too much if you could find and send me this?

2. I am having excessive swarming. I gave the majority of my colonies the run

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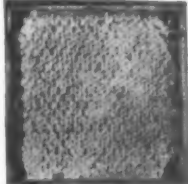
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A Bee Paradise

The acreage of sweet clover is rapidly increasing in the Red River Valley and North Dakota, used for both pasture and hay. Beekeeping and livestock raising are growing at a corresponding rate. Lambs, wool, dairy products, and beef are produced on low cost basis on cheap lands. Following is estimated acreage of sweet clover in several North Dakota counties in 1928:

GRAND FORKS COUNTY	30,000 Acres	RAMSEY COUNTY	28,000 Acres
CASS COUNTY	25,000 Acres	TOWNER COUNTY	20,000 Acres
NELSON COUNTY	19,000 Acres	PEMBIA COUNTY	25,000 Acres

Conditions are equally favorable for bees and livestock. The best feed and forage crop is grown easily and production cost is low in comparison with other localities. It is claimed that sweet clover produces as high as 200 pounds of honey to the acre. The season extends from June until October. Honey of the finest clear quality is produced. Best authorities and experienced keepers predict that North Dakota will soon lead in honey production.

Write for **FREE BOOKLET** on farming resources of North Dakota and information about Low Homeseekers Round Trip Excursion Rates

E. C. Leedy, Dept. J.

GREAT NORTHERN RAILWAY
ST. PAUL, MINNESOTA

of two stories of ten-frame hives about June 1 and did not have much swarming until the past two weeks. But now they come out without the queen having gone to the upper story, in some instances. I have also given them plenty of storing room in plenty of time, with bottom ventilation, and still they swarm. In forty-five colonies I had but five queens more than a year old when I clipped them, and still some swarms are coming out with young queens, the old ones having been superseded. On Sunday I had five swarms in quick succession. They all joined in one cluster, which was the largest one I had ever seen, and I made an exposure of it, but do not know how it will come out. I finally hived them, and they are now filling four ten-frame hive bodies and are working nicely. Verily, bees sometimes break all rules and regulations.

ILLINOIS.

Answer—1. The recipe for label paste to which you refer is to be found on page 442 of the September, 1925, number:

"Add cold water to rice flour and beat into batter. When smooth add boiling water, stirring meanwhile. When of the desired consistency, add from 10 to 25 per cent water and mix thoroughly, then add a half teaspoonful of carbolic acid as a preservative, and the paste will keep for any length of time if protected from evaporation."

We use common alum, a small quantity, to keep the paste fresh. We find that thin labels stick better than those that made of heavy paper.

2. Whenever the bees supersede their queens in the swarming season, this becomes an incentive to swarming, because of their building queen cells. You are correct when you say that bees sometimes break all rules and regulations.

MISCELLANEOUS

1. The best producing colony that I had last year ran out of feed and died in the spring before unpacking time. They were wintered outdoors and well packed in two hive bodies. The brood combs are nearly perfect, but just chock-full of dead bees, and a powerful odor. What is the best thing to do with these combs?

2. Will bees repair foundation that they have gnawed full of holes, or would it best be replaced with new?

3. During the honeyflow last year, I divided the brood in one colony and made two colonies, replacing the brood combs with frames containing foundation; some were partly drawn, others not started. During the packed period mold or mildew formed upon them, rather thin, but quite evenly distributed over the combs. Will the bees clean this off, or should it be replaced?

4. How can I prevent the formation of mold in colonies packed and wintered out of doors? They were well packed in tar paper cases, packing four to six inches around sides and eight to ten inches on top; hive raised off ground four inches and no packing under. The inner cover was left on and escape hole covered with two thicknesses of burlap, over which the packing was placed.

5. I have several colonies with about seven or eight frames of brood. Will they come to full strength for the sweet clover flow, about July 1, or should they be united? If so, at what time?

6. One colony swarmed ten days ago. I hived the swarm on full drawn combs, several very dark. The queen then seemed quite small, and, although I looked for eggs nearly every day, I found none until yesterday, when I found quite a few on one side of one comb. I also looked for eggs in the parent hive and found a fine, large queen and some eggs. I did not see the queen in the swarm on this examination. It is my guess that this is a case of superseding and that the parent colony and swarm both have young queens. Am I right? IOWA.

Answer—1. Where there are only a few bees dead in the comb, we insert the combs, one at a time, in a strong colony, and let the bees take them out. Where the dead bees are in patches, we use a very stiff brush to brush them out. It breaks most of the cell walls, but leaves the foundation intact. Sometimes, when the combs full of dead bees have been kept in a very dry

place, the dead bees may be shaken out by tapping the frame against a post.

2. The foundation must have been given to them at a time when they could not build it out and they used pieces of the wax to build nearer the center. If the holes are very large, there is a chance that they may build them into drone-comb. In that case it would be best to remove it. But if the holes are very small, they will probably fill up the space with the same comb as the rest.

3. Those combs should have been kept in a dry place, but the bees usually clean up mould. It would be best, however, to put those combs in some place where they will get very dry. When you give the bees combs to clean, don't give them more than one at a time.

4. Mould is very unusual in the conditions that you mention. Ordinarily it is where the bees do not have enough air that this happens. They should have more air where there is a possibility of mould.

5. Such colonies ought to gain full strength by the first of July. But you may count that yourself if you bear in mind that it takes thirty-five days from the egg to make a field worker, or two weeks from the time the worker hatches.

6. I believe that your guess is right and that this is a case of supersedure and that both queens are young.

A QUEENLESS INTERVAL

I have two double hives with at least fifty pounds of honey in each, and lots of bees and nice looking queens, but not a sign of brood or eggs. What is the matter, if anything, and what must I do?

TENNESSEE.

Answer—This is a puzzler, and I can only surmise, for it is impossible to answer positively.

Perhaps the queens were old and have been replaced by young queens. In that case the queens would soon begin to lay. It is a little strange, however, that this should happen to both colonies at the same time.

In any case, you must examine the colonies again. If my guess is right, the queens will be laying by the time this letter reaches you. If they are not laying, the only thing to do is to kill them and give the colonies some fresh brood, eggs and young larvae, from some choice colony. If you do not have any such, then do not kill the queens till you have ordered some queens and received them from some breeder. Then you may kill the non-laying queens and introduce the new ones.

Honey to Be Featured Through Illinois

Through the cooperation of V. G. Milum, Secretary of the Illinois Beekeepers' Association, and Miss Grace Armstrong, of the Home Economics Extension Service of the University, honey is to be featured.

Honey is included in the talks on sweets by the demonstrators with samples of honey supplied by local beekeepers. It is suggested also that beekeepers sell their honey through the home bureau markets where such are available.

This is very practical extension work and offers far-reaching possibilities if properly appreciated by the beekeepers and followed up efficiently.



DISPLAY YOUR HONEY PERFECTLY

Dependable Service on Standard Sizes

Our fluted honey jars are made as per specifications of Standardization Committee of the American Honey Producers' League

Distributed by

DADANT & SONS, HAMILTON, ILLINOIS
and

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HART

BOTTLES & JARS

GUS DITTMER COMPANY SPECIALTIES

Working your Wax into foundation for you for cash,
and Dittmer's Non-Sag Brood Foundation

Our Non-Sag Brood Foundation has given absolute satisfaction the past season. Not one word of fault, but any number of commendations. Our foundation business doubled last season, and we are ready to book your orders now. Write us for samples and prices for early orders, which will in all cases be as satisfactory as the quality of our foundation. We furnish a full line of hives, sections, and all other supplies.

GUS DITTMER COMPANY, Augusta, Wis.

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CANS

HONEY CONTAINERS

*Lower Prices --- Save You Money**Large Stocks --- Assure Prompt Shipment**Eight Railroads --- Give Quick Delivery*

Send for New Illustrated Price List

THE A. I. ROOT COMPANY of IOWA
COUNCIL BLUFFS, IOWA

CARTONS



CASES

Queens! Queens! Queens!

*Highest Quality three-banded Italian
stock. The producing kind.
Prompt Service and Satisfaction
Assured.*

50 c Each. \$45.00 per Hundred

P. M. WILLIAMS ❖ Mt. Willing, Ala.

Meetings and Events

(Continued from page 329)

ture, Washington, D. C., has been appointed chairman of a committee of the American Honey Producers' League to attempt to coordinate the dates of the various state and regional beekeepers' meetings for the coming year, in order to avoid conflicts as much as possible and in order to make it possible for speakers to attend a number of different meetings on the same trip at a minimum expense.

Secretaries of beekeepers' associations should get in touch with Mr. Hambleton at once, giving him the dates of their association meetings, in case these have been already decided upon, and suggesting several possible dates in the order of their desirability, in case definite arrangements have not already been made.

Although it is not likely that conflicts can be eliminated entirely, due to the fact that the times of some beekeepers meetings are practically fixed by being tied up with other events, such as Farm and Home Week, etc., it is a start in the right direction and an opportunity for beekeepers to cooperate in such a way as to be helpful to all.

M. C. Tanquary, President,
Am. Honey Producers' League,
Univ. Farm, St. Paul, Minn.

Toronto Meeting of League

Plans are shaping up nicely for the 1931 meeting of the American Honey Producers' League. The meeting will be held in Toronto during the coming February. It is hoped that as many as possible of the various beekeeping organizations of North America will be represented. Every beekeepers' association should make plans early to send a delegate to bring back a report of the proceedings. Individual beekeepers of the United States and Canada should plan to attend this meeting. Aside from the educational feature of the program, beekeepers will gain a lot of pleasure from meeting members of this great fraternity gathered in annual session.

A committee in charge of local arrangements, headed by William A. Weir, of Toronto, is already at work on plans for the entertainment of the delegates to this convention.

J. A. Munro, Sec'y-Treas.,
Am. Honey Producers' League,
State College Station, Fargo,
North Dakota.

"Dixie Beekeeper" and "Beekeepers' Item" Consolidated

Following the trend of modern consolidation, the two bee papers of the South have decided to join forces in a consolidation.

(Continued on page 348)

Smith's Bright, Gentle, Thrifty QUEENS, 50c each

Years of experience produce these queens. They are as good as money can buy. Order from the above price and you will order AGAIN when you see them. Bright, gentle, three-banded Italians that will solve your queen worries. Order now, as we can give you prompt service.

N. B. SMITH & COMPANY CALHOUN, ALABAMA

TIN CANS and PAILS

Best Quality on the Market—July 1st, 1930

In Strong Dust-Proof Cartons—Pails with Sure-on Bails

	Shipment from Grand Rapids.			From Chicago or Wheeling, W. Va.		
	Per 100	Per 500	Per 1000	Per 100	Per 500	Per 1000
2 1/2-pound cans						
100 in carton	\$3.75	\$17.75	\$34.00	\$3.25	\$15.75	\$30.80
5-pound pails						
50 in carton	\$6.50	\$31.00	\$60.00	\$5.75	\$27.50	\$53.75
10-pound pails						
50 in carton	\$9.50	\$45.00	\$88.00	\$8.00	\$39.25	\$76.75
60-pound cans						
	From Grand Rapids.			From Chicago or Wheeling, W. Va.		
	1 box	10 boxes		10 boxes	50 boxes	100 boxes
2 in wood box	\$1.10	\$10.00		\$9.00	\$43.50	\$85.00
50 bulk crate	Per crate \$17.50			Per crate \$15.00		

Prices on Clear Glass Jars

Panel or Plain, in Cartons

Number	Shipment from Grand Rapids or Dunkirk, Ind.			
	1 Carton	10 Cartons	25 Cartons	50 Cartons
1/2 lb.—2 doz. in pkg.	\$.95	\$ 8.75	\$21.25	\$40.00
1 lb.—2 doz. in pkg.	1.15	11.00	26.25	50.00
2 lb.—1 doz. in pkg.	.85	8.00	18.75	37.50

A. G. WOODMAN CO., Grand Rapids, Mich.

50c REMAINDER of SEASON 50c

High Grade Italian Queens
Now Only 50c Each, Any Number

We are now breeding and offering Jay Smith's strain of Italians, a special selected stock with nearly 30 years select breeding back of it. We are very fortunate to be able to produce and offer queens of this famous strain to our customers at this very unusual low price. Our output will be several thousand queens, and prompt shipments are assured. Satisfaction guaranteed or money back.

50c — QUALITY AT LOW COST — 50c

Package Bees—Two-pound package with queen, \$2.75 each; ten or more, \$2.50 each. Three-pound packages with queens, \$1.00 each more.

LEWIS Beeware and DADANT'S Wired Non-Sag Foundation

YORK BEE COMPANY, JESUP, GA.

KNIGHT'S QUEENS are now 50c each

For Immediate Shipment

Good as money can buy. Guaranteed mated pure. Line bred, three-banded, leather-colored Italians. The best honey gatherers and winterers. No disease. No charge for clipping.

JASPER KNIGHT
Hayneville, Alabama

Meetings and Events

(Continued from page 347)

The "Dixie Beekeeper" will no longer be published at Waycross, Georgia, but will have its publication seat also at San Antonio, Texas. In other words, the "Item" has taken over the "Dixie Beekeeper," and the new magazine will be published as "The Beekeepers' Item and Dixie Beekeeper," with headquarters at San Antonio. E. G. LeSturgeon is the editor and Mr. J. J. Wilder will act as field editor. The balance of the staff will remain as it was with the

"Beekeepers' Item" previously before consolidation.

We would like to show our regard for Mr. J. J. Wilder, who has struggled through a number of years, making a very creditable little magazine to represent the southeast of the United States.

Realizing as we do the difficulties in financing a bee publication, we know that he has had an uphill job, particularly as he had his very extensive interest in beekeeping as his major objective. We feel sure that he will make an exceptionally good field editor for Mr. LeSturgeon and will never lose his interest in educating the beekeeping public.

As to Mr. LeSturgeon, who is now editor of the consolidation, he has shown his worth in years past, and we know that he is going to continue to make a high-grade bee magazine and to improve it as the time goes on.

Prize Winners at the Honey Exhibit at the American Honey Producers' League Meeting

We give here the first prize winners at the honey exhibit at the

(Continued on page 353)

ACHORD QUEENS

Fine Three-Banded Italians Bred for Gentleness and Honey Producing Ability

They will please you

NOW 50c EACH ANY NUMBER

Prompt shipments. Safe arrival guaranteed

W. D. ACHORD, Fitzpatrick, Ala.

50c each Thousands Now Ready to Ship 50c each QUEENS -- QUEENS -- QUEENS BERRY'S RELIABLE ITALIAN QUEENS

After thirty-six years of Select Breeding we have a strain of Three-banded Italian Bees that are unsurpassed for disease resistance (especially European foulbrood), and honey production. Having several branches for the production of honey located in the North-western States and Western Canada gives us an excellent opportunity to test out our strain from both honey production as well as climatic standpoints. All queens are of select quality. The culls we destroy. Only those that we would use in our own apiaries do we sell to our customer friends. Wings of queens are clipped free of charge on request.

Safe arrival and satisfaction we guarantee. Also we make prompt shipment or when wanted. We have no disease. Our apiaries were the first in the state to be inspected and were found clean. Directions for introduction and health certificate accompany all shipments.

References: The First National Bank, Montgomery, Ala. Any Bee Journal in the U. S. or Canada.

PRICE OF OUR QUEENS

Less than hundred lots, 50c each

One hundred or more, 45c each

M. C. BERRY & CO., Box 697, Montgomery, Alabama, U. S. A.

BETTER QUEENS

If better queens were produced we wouldn't blame you for buying them,

FOR 50c

We will sell you queens that we will buy back if you can beat them.

ORDER THEM

And if the above guarantee is not broad enough, write your own and we will stand to that.

YOU MUST

Be satisfied if you buy from Stover. We are here to serve you.

THE STOVER APIARIES

TIBBEE STATION, MISS.

Telegraph Office, Mayhew, Miss.

A BOOSTER FOR HONEY SALES

The E. Z. Carry Quart Jar

THIS year, of all years, it behooves the beekeeper to do all he can to promote his honey sales, to use every effort which will reflect in the sale of his honey at the greatest remunerative profit to himself.

Right now, we have a timid public that must be shown the value before it will buy. But every customer recognizes certain factors which make for the desire to buy. Some of these are:

Appeal to the eye

Appeal to the appetite

Quality product

Convenience

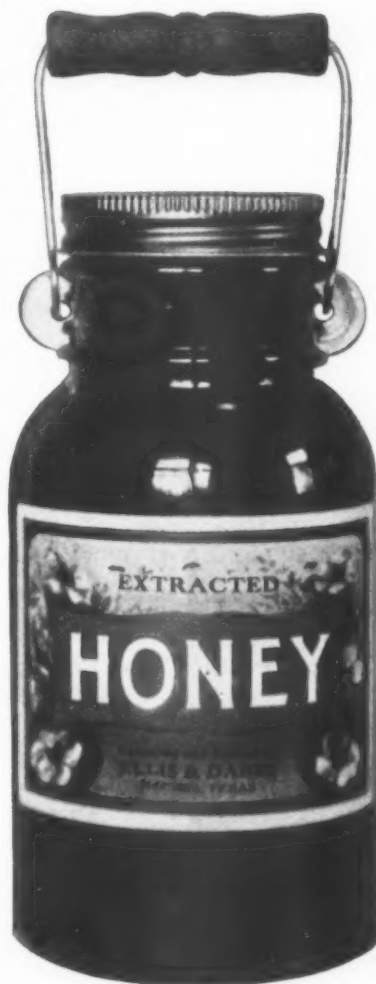
Re-use value of container

The E. Z. CARRY jar combines all of these in an especially efficient manner. A clear glass jar, beautifully colored honey, and an attractive label make an instant appeal.

The sweetness of honey—its historic associations, involuntarily attract. A good honey, cleanly and carefully packed is a real quality article.

The jar itself is convenient, easily carried home from the grocery or roadside stand, and can be used over for canning, preserving, pickling.

Dandy for carrying liquids such as milk, etc. on picnics. Even a child can be trusted to bring a jar of peaches from the cellar if packed in and E. Z. CARRY.



E. Z. Carry Jar

MORE and more the purchaser of foods is coming to want to see the product he buys. And more and more the purchase is made and the article carried away on the spot.

Here is where the E. Z. CARRY jar comes in. Just the thing for the roadside stand. One customer has already ordered ten gross for this very purpose.

And it is just as good for the grocery sale, because it is equally convenient.

So whether you sell at home, through the roadside stand or through your grocer—this E. Z. CARRY jar with the convenient handle should help you boost your home honey sales—to get nearer the worth of your clear high grade honey.

Say what we will, the economical way to sell honey is in fairly good sized lots. This quart jar will dispose of three pounds of honey every time you make a sale.

And the price, fortunately, is attractive.

FULL quart measure -- packed 12 in a corrugated shipping case -- weight of case 20 lbs.

PRICE 90c per case

F. O. B. Hamilton, Ill. or Keokuk, Ia.

Special prices on large quantities.

Order your supply today.

REMEMBER that we carry also a full line of all sorts of packages for honey--plain tin pails--fluted glass jars with screw caps--lithographed pails--and packages for sending honey by mail. Also five gallon cans in any quantity. For comb honey we have the individual Revelation

wrappers (the dust-proof package) and the comb honey carton. And in cases you have your choice of corrugated shipping cases or either two tier or single tier glass front cases. And you need selling helps in the shape of labels and paste, outdoor honey signs, stickers, folders, recipe booklets, net weight stamps. In fact everything you will need to help the sale of your crop.



Send for Fall Price List—It Will Be Sent By Return Mail

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When you need
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Mountain States Honey Prod. Ass'n. Boise, Idaho	M. H. Hunt & Son Lansing, Michigan	Burrows Hdwe. Co. Beeville, Tex.
The A. L. Boyden Company Los Angeles, Cal.	A. I. Root Company St. Paul, Minn. Chicago, Ill. Syracuse, N. Y.	G. B. Lewis Co. Watertown, Wis. Albany, N. Y. Sioux City, Ia. Lynchburg, Va. Texarkana
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The A. L. Boyden Company of Seattle Seattle, Washington	Magill & Co. Fargo, N. Dak.	Quick Seed & Feed Co. Phoenix, Arizona
Superior Honey Co. Los Angeles, Calif. Manhattan, Mont.	Sioux Honey Ass'n Sioux City, Ia.	Los Angeles Honey Co. Los Angeles, California
Dadant & Sons Hamilton, Ill.	The A. I. Root Company of Texas San Antonio, Texas	Chas. B. Justice Co. San Diego, California

stock of Honey Cans that have been tested at the factory for leaks and that will assure your Honey the utmost protection.

Write or wire any of these Distributors for samples, prices or full information.

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Crop and Market Report

Compiled by M. G. Dadant

For our July report we asked reporters to answer the following questions:

1. How is the crop so far compared to 1929?
2. Honey plant and crop prospect conditions for balance of season.
3. How are honey prices compared to same date in 1929?

THE CROP SO FAR

In the southeastern sections of the country the crop in most instances has been a disappointment. North Georgia has fared very well, perhaps has a little more honey than last year, and Florida, at least central and southern Florida, is the equal of a year ago. Louisiana will perhaps come near to normal, and the orange-producing sections of California are getting a better crop than was the case in 1929.

Outside of this, conditions are far below normal in the early crop states. Maryland, Virginia and the coastal states report the early crop a great disappointment owing to the cool weather, and in some sections in the South the shortage has been due to extreme rains and, above all, the cool weather. The same conditions are true in Texas, where the early crop has been almost a failure. Arizona and New Mexico are not reporting anything up to ordinary.

Even in the central western and eastern states farther north the early honeyflows which will help stimulate the colonies to breeding have also been a disappointment because of the extreme cool weather. At the date this is written the white clover honeyflow should be on in practically all sections of the Central West and East. To the contrary, there has been practically no white clover honey gathered so far (June 18), because of dry and cool weather. The prospects earlier were wonderful for a white clover flow, but this was replaced about June 1 by question as to whether the bees would not have to be fed heavily because of the extreme dry spell and the cool weather.

Since June 10 copious rains have fallen in most sections.

PLANT PROSPECTS

As stated above, in the East and Central West plant prospects are far below what they were considered a month ago, and largely because of the fact that the rains have come too late to help greatly. The dry weather cut short the clover flow and many of the clover plants have been injured, if not totally destroyed. It appears, therefore, that in the entire white clover area the prospects will be below a year ago, and in many instances very much below. In fact some reporters are intimating that feeding may have to be done. However, the late rains have done a great deal to alleviate this condition, and we believe in most sections bees are making a living and perhaps a little better, but will harvest no large amount of surplus.

The sections in the clover area which are reporting somewhat better than this are northern Illinois, northern and western Iowa, and most of Minnesota. Likewise, conditions are particularly satisfactory in South Dakota and Nebraska.

In the southeastern states conditions appear to be normal for the balance of the season, with a fair crop in prospect, and the same is true in the Central South and also in Texas, if the weather turns satisfactory.

In New Mexico conditions seem to be above last year, which was a failure, and fair prospects are in hand. Arizona is reporting rather bad conditions.

In North Dakota much of the sweet clover has been plowed under, and some reports are that there is not 10 per cent of the clover there was a year ago and bees not in the best condition to gather it. It would not appear that conditions would produce a normal crop there.

In the intermountain territory conditions are satisfactory and we believe that there will be a normal crop. As a matter of fact, outside of parts of Georgia and Florida, it looks like the intermountain territory and the plains states would have to furnish the bulk of the surplus honey this year.

We must not lose sight of the fact, however, that even in the Central West the acreage of sweet clover is gradually increasing and our crops are getting later, so that a fair crop may be in prospect yet from sweet clover. White clover is rapidly waning without any appreciable amount of surplus harvested.

Conditions seem to be above normal as to prospects in Montana, Idaho and Washington, with a slightly below normal condition in Oregon.

California got their rain too late evidently to do the most good. Orange flow was satisfactory, but the sage flow has been extremely unsatisfactory and in some sections feeding has had to be done.

Prospects are fair in California, but we do not look for the bumper crop that was anticipated a little earlier, although the crop should be the equal of last year at least.

All in all, it most certainly does not look like a bumper crop this year, but on the contrary appears to be a season when the crop is going to be short unless we have heavy fall flows and extremely heavy harvest in some sections to make up for the shortage in others.

HONEY PRICES

Except in the sections where most of the honey is disposed of locally, there is a definite trend toward lower prices of honey, and particularly a definite trend toward lower offers on honey. The orange honey of California is selling usually at a price from 8 cents to 8½ cents per pound, whereas a year ago the price was nearer 10 cents for an average.

Even in the intermountain areas where sales are being made there has been a shading in prices, and in the central states a number of producers have cut their prices materially in order to dispose of the old crop before the new crop came in. With the crop now a prospective failure, it would appear that the beekeepers would have been better off to hold their honey until the new crop year, because the prospects are far from good.

All in all, this has been a rather hectic season: bees coming through in moderately good shape from winter, developing well in spring, with unusually desirable prospects ahead, and this being curtailed greatly by cool weather and dry weather. Now, just about a month late, comes the rains and, we hope, warmer weather. There are seasons when all honey plants seem to yield and make a fair surplus instead of a crop failure, and we are hoping this will be the case in this instance. Otherwise it is up to the intermountain states and the plains areas and a few other areas where sweet clover is abundant to furnish the bulk of the surplus for 1930.

Conditions in the provinces of Canada seem to be satisfactory, with perhaps best conditions in Ontario and slightly too dry in the extreme western provinces. Considerable quantities of honey are still carried over in Ontario and the price is sagging.

We Are Cash Buyers of Honey and Beeswax
Submit samples, and best prices, freight prepaid
Cincinnati We also furnish cans and cases.
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Cincinnati, Ohio

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AMERICAN BEE JOURNAL

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Buy and Sell All Grades Extracted Honey
References: 1st National Bank, R. G. Dun or
Bradstreet's Commercial Reports.

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—where you may buy, sell or exchange at moderate cost—only 7 cents a word. Count each word of your message, including name and address. Our advertisers tell us: "IT PAYS." Send your ad for the very next issue now to reach us by the 15th. Terms: Send remittance with copy and order. Minimum ad ten words.

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You Sell Quicker by Telling More

Ads as small as ten words, costing only 70c, are accepted here, but our regular advertisers have demonstrated that it pays to tell more. Use enough words to thoroughly describe your offering and you'll sell quicker. Address all orders or inquiries to the Classified Advertising Department of the American Bee Journal, Hamilton, Illinois.

Will sell your Honey, Flowers, Poultry, Fruit, Pets (as rabbits, etc.) and more . . . Is your ad here?

As a measure of precaution to our readers, we require references of all new advertisers. To save time, please send the name of your bank and other references with your copy.

BEEES AND QUEENS

BUY your queens from Allen Latham, Norwichtown, Conn.

CHOICE, bright Italian queens that are a pleasure to work with and you will be proud to own. Requeen with stock that has been bred and selected in the North the past twenty-seven years for good wintering; hustlers, gentle, and fine color. One queen, \$1.00; dozen, \$10.00. Breeders, \$10. Emil W. Gutekunst, Colden, N. Y.

GOLDEN Italian and Carniolan queens. Tested, \$1.00; untested, 65c. Safe arrival guaranteed. Write for prices on package bees and nuclei. C. B. Bankston, Box 65, Buffalo, Texas.

THANKS for your past business. Will be open for your orders on the same stand in '31 with better stock, better breeding, better service and larger holdings. If you are in the city of New Orleans in the meantime, look me up at Kenner, Louisiana. Jes Dalton, Kenner, La.

JULY special price on our golden Italian queens. Producing large, beautiful bees. Solid yellow to tip. Select untested, \$1.00 each. Dr. White Bee Co., Sandia, Texas.

DIEMER QUEENS—\$1.00 each; six, \$5.00; twelve or more, 75 cents each. Queens sent in "Double Barrel" introducing cage. It gets queens to you in fine condition and gets them introduced without balling. Big, double, queenright colonies work on queen-cells from start to finish. Mated from large, four-frame nuclei, and the young queens have the best chance in the world to develop. Yellow queens that produce yellow bees that get the honey. J. F. Diemer, Liberty, Mo., Route 1.

PRODUCTION-BRED Italian queens, untested, 50c each, any quantity. A. E. Crandall, Berlin, Conn.

BRIGHT ITALIAN QUEENS—Bred by selection for sixteen years in same location. Large select queens only. Prolific layers. Bees gentle, hardy and beautiful. July prices, 80c each, \$8.50 per dozen. Hailey's Apiaries, Hughes Springs, Texas.

EARLY PACKAGE BEES—Prompt shipment, beginning May 1. Two-pound package without queen, \$2.50; three-pound, \$3.50. Add price of queen if wanted. Choice, hardy Italian queens \$1.00; ten for \$9.00. Safe arrival guaranteed on return of bad order receipt signed by express agent. Birdie M. Hartle, 924 Pleasant Street, Reynoldsville, Pa.

GOLDEN Italian queens for sale, the rest of the season: One, 75c; 6, \$4.00; 12, \$7.50; 25 or more, 50c each. The same good honey gatherers that are giving satisfaction all over the U. S. and Canada. They will please you. E. A. Simmons Apiaries, Greenville, Ala.

JULY QUEENS \$45.00 per hundred; 50c each in small quantities. Let us send you our circular. Address inquiries and orders to Stearns Bee Company, Wharton, Texas.

Advertisers offering used equipment or bees on combs must guarantee them free from disease, or state exact condition, or furnish certificate of inspection from authorized inspector. Conditions should be stated to insure that buyer is fully informed.

IF you want gentle bees, good honey gatherers and beautiful to look at, my strain of golden Italians will please you. Prices, July to November: One untested, 90c; six, \$4.80; twelve to forty-nine, each, 70c; fifty or more, each, 65c. Tested, each, \$1.25. Circular on request. Health certificate, safe arrival and satisfaction. Hazel V. Bonkemeyer, R. 2, Randleman, N. C.

WRIGHT'S GOLDEN QUEENS—Producing large, hustling bees, very gentle and beautiful. Select untested queens, \$1.00 each; five to ten, 85c each; ten or more, 70c each. Select tested, \$2.50 each. Breeders, \$10.00 each. Safe arrival and satisfaction guaranteed. Satisfied customers in thirty-seven states and five provinces in Canada. W. C. Wright, Holt, Mo.

SIMMONS ITALIAN QUEENS—One, 90c; six, \$4.75; twelve, \$9.00. No disease. Prompt delivery. Fairmount Apiary, Livingston, N. Y.

IMPROVE your stock and insure a crop. Besides holding Indiana state comb honey production records for ten successive years, these gentle, scientifically line-bred Italian queens "WIN AGAIN," having the longest tongues in competition with twenty other strains.

	1 to 25	25-50	50-100
Untested	\$1.25	\$1.15	\$1.00
Select tested	2.50	Breeders \$10 each	

Honeyville Queen Apiary, Route 1, Foothill Blvd., east of Monrovia, Calif. Visitors welcome.

I AM offering my select golden Italian queens for the balance of season (untested), any number, 50c each; tested, \$1.00 each. I guarantee these queens to be as good as money can buy or your money back. E. F. Day, Honoraville, Ala.

GOLDEN Italian queens producing golden bees. Good honey gatherers, not bad to swarm. State inspected. Satisfaction guaranteed. Tested, \$1.25; select tested, \$2.25. Untested, 90c each; six, \$4.80; twelve or more, 70c each. Select untested, \$1.00. D. T. Gaster, R. 2, Randleman, N. C.

TENNESSEE-BRED QUEENS—Untested, 75 cents each. Tested, \$1.50 each, John M. Davis, Spring Hill, Tenn.

FOR SALE

FOR SALE—100 colonies bees in painted hives, with full sheets wired foundation. No disease. Price of hives and foundation only asked. L. L. Ferebee, Pineland, S. C.

FOR SALE—40 colonies of Italian bees and entire equipment at the rate of \$5.00 for ten-frame hives. Having lost my father, I am not able to care for same. Margarette Applegate Ellis, 840 Main St., Reynoldsville, Pa.

Copy for this department must reach us not later than the fifteenth of each month preceding date of issue. If intended for classified department, it should be so stated when advertisement is sent.

FOR SALE—Highest quality queen mailing cages. Used extensively by the largest queen breeders in the South. Samples and prices on request. Hamilton Bee Supply Co., Almont, Mich.

FOR SALE—85 ten-frame supers for comb honey, nearly new. Bargain at 60c each. E. Adams, Earlville, Ill.

FOR SALE CHEAP—750 colonies bees with modern equipment. Good location. No disease. Law practice demands my time. N. L. Stapleton, Colquitt, Ga.

HONEY FOR SALE

HONEY FOR SALE—Any kind, any quantity. The John G. Paton Company, 230 Park Avenue, New York.

FOR SALE—White clover honey in 60-pound cans. None finer. Satisfaction guaranteed. J. F. Moore, Tiffin, Ohio.

HONEY FOR SALE—All grades, any quantity. H. & S. Honey and Wax Company, Inc., 265 Greenwich St., New York City.

COMB, extracted and chunk honey in ten sizes glass containers and 2½, 5-, 10- and 60-pound tins. Livest labels in U. S. or plain. One of our special display cases with \$25 and \$50 orders. Write for free illustrated circular showing our packages and free samples of honey. Griawold Honey Company, Madison, O., U. S. A.

WHITE CLOVER comb honey, packed eight cases to carrier. W. L. Ritter, Genoa, Ill., DeKalb County.

FOR SALE—Extra choice white clover honey, case or carload; also amber. David Running, Fillion, Mich.

HONEY (comb and extracted), pure maple syrup, maple sugar and sorghum molasses. Special price to quantity buyers. C. J. Morrison, 1235 Lincoln Way West, South Bend, Ind.

STURDEVANT'S CLOVER HONEY—St. Paul, Neb. Any quantity.

SHALLOW frame white comb honey and white extracted honey. The Colorado Honey Producers' Ass'n, Denver, Colo.

FOR SALE—Our own crop white clover and amber fall honey in barrels and cans. State quantity wanted and we will quote prices. Samples on request. Dadant & Sons, Hamilton, Illinois.

NEW CROP shallow frame comb honey, also section honey; nice white stock, securely packed, available for shipment now. Colorado Honey Prod. Ass'n, Denver, Colo.

HONEY FOR SALE—White and amber honey in 60-lb., 10-lb. and 5-lb. tins. Write for prices. Dadant & Sons, Hamilton, Illinois.

FOR SALE—Northern white, extracted and comb honey. M. W. Cousineau, Moorhead, Minn.

WHITE Clover extracted honey. Write for prices and samples. Kalona Honey Co., Kalona, Iowa.

FOR SALE—Three cars white and white amber clover extracted, packed in sixties, 7c fob La Jara, Colo. Stahmann Apiaries.

CLOVER honey, choice, ripened on bees. Satisfaction guaranteed. Case or quantity. E. J. Stahlman, Grover Hill, Ohio.

FOR SALE—Water-white clover honey in new cans and cases, \$9.00 per case. Virgil Weaver, Merville, Iowa.

EXTRACTED white at a reasonable low price to small bottlers or buyers, well strained and settled and free from impurities. A fine table honey, sample 15c. Geo. Seastream, Moorhead, Minn. A Producer.

FOR SALE—Delicious palmetto honey in barrels; also heavy bodied amber. P. W. Sowinski, Fort Pierce, Fla.

FOR SALE—20 cases of pure white clover honey in 60-lb. cans. Can pack in 1-lb. glass, 5- and 10-lb. tins. State quantity wanted. Irvin Nordgaard, Peterson, Minn.

CHOICE lots white clover, sweet clover, light amber and buckwheat in any amount. State quantity wanted when writing. A. I. Root Company of Chicago, 224-230 West Huron, St., Chicago, Ill.

HONEY AND BEESWAX WANTED

WANTED—Car lots of honey. State quantity, shipping point and price. Mail sample. Hamilton, Wallace & Bryant, Los Angeles, Calif.

WANTED—A car or less quantity of white honey in 60-lb. cans. Mail sample and quote lowest cash price for same. J. S. Bulkley, 816 Hazel St., Birmingham, Mich.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5 cents a pound for wax rendering. Fred W. Muth Company, 204 Walnut St., Cincinnati, Ohio.

CARLOAD or less than carload. Advise quantity and how packed and mail sample. Hoffman & Hauck Division, 646 Dean St., Brooklyn, N. Y.

SUPPLIES

SAGGED COMBS are result of slackened wires caused by wires cutting soft wood of frames. Use metal eyelets. Per 1,000, 60c. Handy tool for inserting eyelets, 25c. Postage 3c per 1,000. Superior Honey Co., Ogden, Utah.

COMB FOUNDATION—Note these prices on twenty-pound lots: Medium brood, 64c; thin super, 74c. Can furnish the new non-sagging foundation. Wax worked at lowest rates. E. S. Robinson, Mayville, N. Y.

MAKE queen introduction sure. One Safin cage by mail, 25c; five for \$1.00. Allen Latham, Norwichtown, Conn.

FOR SALE—We are constantly accumulating bee supplies, slightly shopworn; odd sized, surpluses, etc., which we desire to dispose of and on which we can quote you bargain prices. Write for complete list of our bargain material. We can save you money on items you may desire from it. Dadant & Sons, Hamilton, Illinois.

BEST QUALITY bee supplies, attractive prices, prompt shipment. Illustrated catalog on request. We buy beeswax at all times and remit promptly. The Colorado Honey Producers' Ass'n, Denver, Colo.

HAVE YOU any Bee Journals or bee books published previous to 1900 you wish to dispose of? If so, send us a list. American Bee Journal, Hamilton, Ill.

THE DADANT SYSTEM IN ITALIAN—The "Dadant System of Beekeeping" is now published in Italian, "Il Sistema d'Apicoltura Dadant." Send orders to the American Bee Journal. Price \$1.00.

FOR SALE—200 used 60-lb. honey cans, good condition. Forty cents per crate. FOB St. Louis. W. E. Wilson, 2659 Sutton Ave., St. Louis, Mo.

FOR SALE—Used 60—lb. honey cans, two to case, in good condition. Cheap. E. Rau & Co., 110 N. Franklin St., Chicago.

POSITION WANTED

POSITION to manage apiary. Dakota experience. John Fruechte, Dorchester, Ia.

GOATS

THREE-YEAR-OLD purebred, registered Toggenburg doe; a high-class animal from a famous sire; and just fresh. Also several purebred buck kids ready for fall service. Fairmount Apiary, Livingston, N. Y.

RABBITS

RABBITS and bees good combination. Chin-chilla, king of fur rabbits. I have foundation stock equal to any and at prices to fit a beekeeper's pocketbook on present conditions. Stock of all ages on hand. Lon Wilson, Maquoketa, Iowa.

DOGS

ENGLISH pointer pups, two months old, \$10 each, male or female. No better stock. Will be just right age to do fine work this fall. Write J. S. Hudgins, Leon, Ky.

MISCELLANEOUS

PLANS for poultry houses; 150 illustrations. You need this book. Write for free offer and sample copy of "Inland Poultry Journal," 61 Cord Bldg., Indianapolis, Ind.

SELL IT—Honey or bees or queens or second-hand equipment or pet stock or poultry, by advertising it in *Gleanings in Bee Culture*, Medina, Ohio, with its more than 20,000 paid subscribers. Rates: 7c a word classified; \$4.20 an inch for display advertising. That great beekeeper, George S. Demuth, is editor, for whose beekeeping teachings 20,000 beekeepers subscribe.

THE BEE WORLD—The leading bee journal in Great Britain and the only international bee review in existence. Specializes in the world's news in both science and practice of apiculture. Specimen copy, post free, 12 cents stamps. Membership of the Club, including subscription to the paper, \$2.55 (10/6). The Apis Club, Brockhill, London Road, Camberley, Surrey, England.

Meetings and Events

(Continued from page 348)

League meeting in Milwaukee: The best general exhibit, Wisconsin Honey Farm, Oconomowoc, Wisconsin; best exhibit from outside the state, William Mosteller, Casper, Wyoming; best looking section of comb honey, Clyde Wheeler, Oberlin, Ohio; best display of comb honey, L. O. Finn, Hope, North Dakota; best water white extracted honey, Clyde Wheeler, Oberlin, Ohio; best white extracted honey, Elmer Carr, Pennington, New Jersey; best amber extracted honey, Howard's Honey Farm, Tippecanoe, Wisconsin; best dark extracted honey, Howard's Honey Farm, Tippecanoe, Wisconsin; best display of wax, Sisters of St. Benedict, Crookston, Minnesota; and best display of candied honey, William Mosteller, Casper, Wyoming.

Arkansas Valley Meeting

On Saturday, March 1, the Arkansas Valley Beekeepers' Association held their annual meeting and the following officers were elected for the ensuing year:

President, E. C. Hamler, Mulvane, Kansas; Vice-President, R. R. Foose, Piedmont, Kansas; Secretary-Treasurer, Charles Dye, 544 North Lorraine, Wichita, Kansas.

Mr. A. V. Small, of Augusta, gave a talk on "Wintering," showing the advantages of a windbreak and the situation of the apiary in reference to the windbreak. He also showed the way to place an apiary in connection with a windbreak so it would not be bothered by livestock.

Victor Murdock, of the Wichita Eagle, gave a talk on his experiences as a beginner in beekeeping, and also pointed out the advantages of honey production in the Arkansas River Valley in Kansas.

R. L. Parker gave a talk on "The Evolution of Honey and Its Constituents" and the work of the Mountain States Honey Producers' Association.

R. L. Parker.

Trying Weather in California

Mr. A. K. Whidden, of San Diego County, reports weather conditions for the month of May as being the most trying of his long beekeeping experience. Rainfall in certain parts of southern California has surpassed the records of the past eighty years for the month of May. On one of Mr. Whidden's locations 5 3/4 inches of rain fell during the month; at another location, according to Government records, 8 inches fell. This unusual rainfall, so late in the season, would seem to indicate a heavy honeyflow and a long continued flow; but storm conditions of this kind make it extremely difficult to get the bees ready for the harvest. Divisions made in anticipation of seasonable weather may starve during long-continued storm conditions, and queen-cells built in favorable weather may be torn down. If it is true that there is no such thing as bad weather, only different kinds of good weather, there are times when the beekeeper feels that a change for the better would be welcome.

R. B. M.

"Honeybee" Davis Reports Good Beekeeping in Florida

Joe B. Davis, nicknamed "Honeybee" because he produces the finest honey in Levy County, Florida, reports that the honey business in his section of the state is picking up with rapid strides. He said the blackberries are in full bloom everywhere in his section and the bees are making the most of it. In addition to a large supply of blackberry bloom honey, Mr. Davis expects to have a quantity of gallberry honey for sale soon. Gallberry honey cannot be beat, he says, as it never granulates, and is much favored by many on this account.

L. D. B.

Dress Your Honey Well



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Now

is the time to order honey labels, before the rush begins. We have a reserve stock of over a million awaiting your imprint.

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Our catalogue contains some snappy new designs and we still have the old stand-bys that have been favorites with honey producers for many years.

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Hamilton, Illinois



CARNIOLANS

are very gentle, very prolific, build up rapidly during the spring, resist brood diseases well, build very white combs and are most excellent workers. Jan Strgar strain—the foremost native Carniolan queen breeder. Carniolans are like an honest man—you can depend on them.

Untested queens, one	-----	\$1.00
Untested queens, dozen	-----	10.00
Tested queens, each	-----	2.00

CAUCASIANS

The hardy gray bees from the mountainous regions of the province of Terek, Caucasus, extremely gentle, prolific, longest tongues of any race of bees, excellent workers and this strain propolizes but little. Ask for circular.

Untested queens, one	-----	\$1.25
Untested queens, dozen	-----	14.00
Tested queens, each	-----	2.25

Lower prices on both races in larger lots. Write how many you need and get prices.

ALBERT G. HANN, Glen Gardner, N. J.

Stevenson's Apiaries, Westwego, La.

Produce Golden Italian Queens that are uniform, large, long-lived and equal the best on the market.

We do all our own work in queen-raising. Only the smallest larvae are used; the few cells that are small or ill-shaped are destroyed. Our breeding stock is the best that can be procured and of their progeny all visitors and customers say, "I never knew bees were so gentle!"

You'll never regret it if you send us your order. Satisfied customers in 34 states.

Single Queens, \$1.00; two to nine, 80c each; ten and over, 70c each. Two-pound package with queen \$3.00; three-pound package, \$3.75.

MACK'S QUEENS (THREE-BAND ITALIANS)

represent the highest standard to which commercial queen-rearing has thus far advanced. In fact we could not send you better queens if we charged you \$5.00 each for them. Yet our 14 years' experience producing these mighty fine queens enables us to offer them to you at these attractive prices:

Untested, 60c each; \$6.60 a dozen; \$50.00 a hundred

Testimonials—From Iowa: "Boy, they sure do their stuff." Pennsylvania: "Your queens are as good as gold." Indiana: "Never saw so many bees in my life." Missouri (the Show Me State): "You have been recommended to me as one of the best breeders in U. S." And hundreds of others similar to above. We guarantee our queens to please you also.

HERMAN McCONNELL
(The Bee and Honey Man)
ROBINSON, Route 2, ILLINOIS

Save Time -- Save Worry

Dadant's Wired Foundation

Can be nailed into Lewis Slotted Bottom Bar in a jiffy. And such wonderful combs!

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QUEENS 45c

High grade pure Italians.

Satisfied customers my aim.

Six for \$2.50; twelve for \$5.00;
twenty-five for \$10.00.

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Greenville, S. C.

Honey Marketing

Here is what helps you
most to do it best:

Handsome Labels,
Pails and
Glass Jars

Send today for our new
label catalog and new
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lar. New things in both
of them. Low prices.

The A. I. Root Co., Medina, Ohio